Product	Title	Part Number
WorkCentre 480/470cx	**Service Manual**	**701P14230**

Status	Date
Reprint	**June 1999**

NOTE: Please read WorkCentre 480/470cx Differences in Section 6 before servicing a WorkCentre 470cx machine.

This reprint contains the information in Service Manual 701P14810 for the WorkCentre 480cx as well as new information for servicing the WorkCentre 470cx and changes showing XE as the European operating company.

Section 1

Corrected title

Section 2

Updated Control Panel Messages to match latest F/W.

Updated RAP 2.2, 3.1 and 8.1 to show differences between 480 and 470.

Section 3

Updated IQRAP 1, 2, and 3 to include new troubleshooting information.

Section 4

Updated REP 1.2, 1.3, 4.1 and 4.2 to identify differences between 480 and 470.

Section 5

Updated PL 1.1, 2.1, 3.1 and 4.1 to identify changes due to differences between 480 and 470 as well as part changes since last pinting.

Section 6

Updated 480/470 product codes.

Updated Control Panel to identify new information and to include 480 and 470 differences.

Added WorkCentre 480/470cx Differences section.

Updated Accessories/Supplies/Consumables to show 480 and 470 differences.

Updated Specifications, Service Mode, Setting Up the System, F/W download instructions, System Data and Self Test definition.

Added Firmware Matrix and information.

Section 7

Updated to show 480 and 470 differences.

WorkCentre

480/470cx

Service Manual

WorkCentre 480/470cx Service Manual

WorkCentre 480/470cx
Service Manual

CAUTION
The Main PBA has a lithium battery which is not spared item. If the Main PWB fails, return the assembly to the X erox premises f or disposal in accordance with local regulations. DO NOT SHORT CIRCUIT T HE BATTERY TERMINALS.

Certain components in this product are susceptible to damage from electrostatic discharge. Observe all ESD procedures to avoid component damage.

NOTICE

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Revision Control List

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Table of Contents

Introduction

About this manual

This ma nual is part of the multinational documentation that is structured in a specified Xerox format.

Organization

The Xerox Document WorkCentre Service Manual is the primary document used for repairing and maintaining the family of products. The manual contains this information divided into the following sections:

Section 1   Service Call Procedures

This section is used to identify the first audible or visual symptom for the problem. procedures will then direct you to a RAP or they identify a faulty component or subassembly.

Section 2   Repair Analysis Procedures

This se c tion co n t ains Repair Analysis Procedures (RAPs). You will be directed to this section to isolate a faulty component or subassembly.

Section 3   Image Quality Repair Analysis Procedures

This section co n tains Image Quality Repair Analysis Procedures (I Q RAP s) and Image Quality samples. You will refer to this section to identify test pattern samples or isolation procedures for common image quality defects.

Section 4   Repair / Adjustment

This se ction contains the instructions for removal, replacement, a nd adjustment o f the spared parts within the machine.

Section 5   Parts List

This section co nsists of illustrations and part number lists. Any part that is spared or any part that must be removed to access a spared part is illustrated. Common hardware is shown as a letter callout.

Section 6   General Procedures / Information

This se ction contains general procedures, product specifications, supplemental tools and supplies, modification information, and installation instructions.

Section 7   Wiring Data

This se ction con tains illustrations and lists of the signals and connectors. The illustrations show the power, gro u nd, and the control signal distribution. The lists show the signals and pin assignments for all connectors.

How to use this manual

Start all service calls and end all service calls with the Service Call Procedures, Section 1. Perform Initial Actions and the System Check to identify a symptom.

Follow the instructions provided within the Service Call Procedures and proceed to the appropriate section of the manual.

After the repair is complete, verify the repair with the System Check.

Manual Revision Symbols

Revision pages containing the latest service information will be sent to you so that you can update your service manual. When a partial revision is distributed, the changes will be identified on each page.

Text   Black vertical bar at the beginning of the text for partial revisions.

When a partial revision or a complete manual revision is distributed, the changes will also be identified as follows:

Page   The date of issue on the bottom of each page.

Manual   An updated revision control list. This list will identify the latest date each page.

Model Distinction

TEXT

If different parts or actions exist because of different models, the model distinction (xxx) will identify the appropriate part or action.

Example 1). - - - - - - - xxx: The sequence is . . . .

Example 2) - - - - - - - The sequence is . . . (xxx) .

Terminology and Symbols

The following is the terminology and symbols that are used in this manual for Warnings, Electrostatic Device or general Cautions, and Notes.

Electro Static Discharge

Certain components in this product are susceptible to damage from electrostatic discharge. Observe all ESD procedures to avoid component damage.

WARNING
Improper operation may result in injury to a person.

CAUTION
Improper operation may result in machine damage.

NOTE: Hints or other information that may assist the user.

Modification

The machine serial number listed will identify the earliest number of the change on the manufactured machine.

Section Contents

Introduction

This chapter describes the tasks that a service technician m complete when responding to a problem at a customer site. Collectively, these tasks are the Service Call Procedure.

These procedures direct you to other sections when diagnosing and repairing the WorkCentre. You should always return to this section to continue with the Service Call Procedure.

Complete the procedures in this chapter in the order given. By ignoring the sequence of procedures, you may diagnose a symptom incorrectly and cause the customer undue frustration and expense.

Initial Actions are used to gather information regarding the performance of the machine and prepare the product for servicing.

System Checks are used to verify the normal operation of the machine. In the Y/N steps of the system checks, a Yes response will lead you to the next step. A No response will indicate the next step to perform or will direct you to a RAP.

RAPs will provide the instructions to isolate the faulty part or provide a list of suspect parts, when isolation is not possible.

Subsystem maintenance contains routine maintenance procedures.

Final Acti   describe procedures you carry out when completing the service call.

Electro Static Discharge

Certain components in this product are susceptible to damage from electrostatic discharge. Observe all ESD procedures to avoid component damage.

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Initial Actions

If possible perform the following before you begin the initial actions

- If you are performing on-site service, print the System Data List. This will provide you with the customer's settings to allow you to restore them later.

- If you are performing on-site service, print out Telephone Numbers List.

- Enter Service Mode by pressing ▤ , #, 1, 9, 3, 4. LCD displays **T** in the lower right corner.

- Reset machine to defaults.

   ▤ ,5.

- Enter Service Mode again.

   Then enter fax name and ID number.

Initial Actions

Load paper in the APF. Connect the (LINE) connector to a known good telephone line. Disconnect any external devices connected to (EXT) connection.

↓

Disconnect and reconnect power cord. Observe unit.

Unit appears to have power? — **NO** → I Go to AC Power Check RAP 2.1

YES

Busy and Alarm LEDs come on for approximately 4 seconds and then turn off. — **NO** → Go to Control Panel RAP 7.1

YES

The following messages appear during power up:
1. All segments black
2. Powering Up.. .please wait — **NO** → Go to Control Panel RAP 7.1

YES

The Carriage motor drives and returns to the Maintenance Station. — **NO** → Go to Carriage Motor RAP 4.1

YES

The APF motor rotates. — **NO** → Go to Paper Feed RAP 3.1

YES

The following message appears on the LCD screen:

* MAR - 01 - 1999   100%
01 : 30 PM   FAX — **NO** → Go to Control Panel Messages RAP 1.1

YES

Perform System Self Test on the following page, or if you have a known symptom, go to the appropriate system check in this chapter.

* Display may be slightly different depending on language, date, and time.
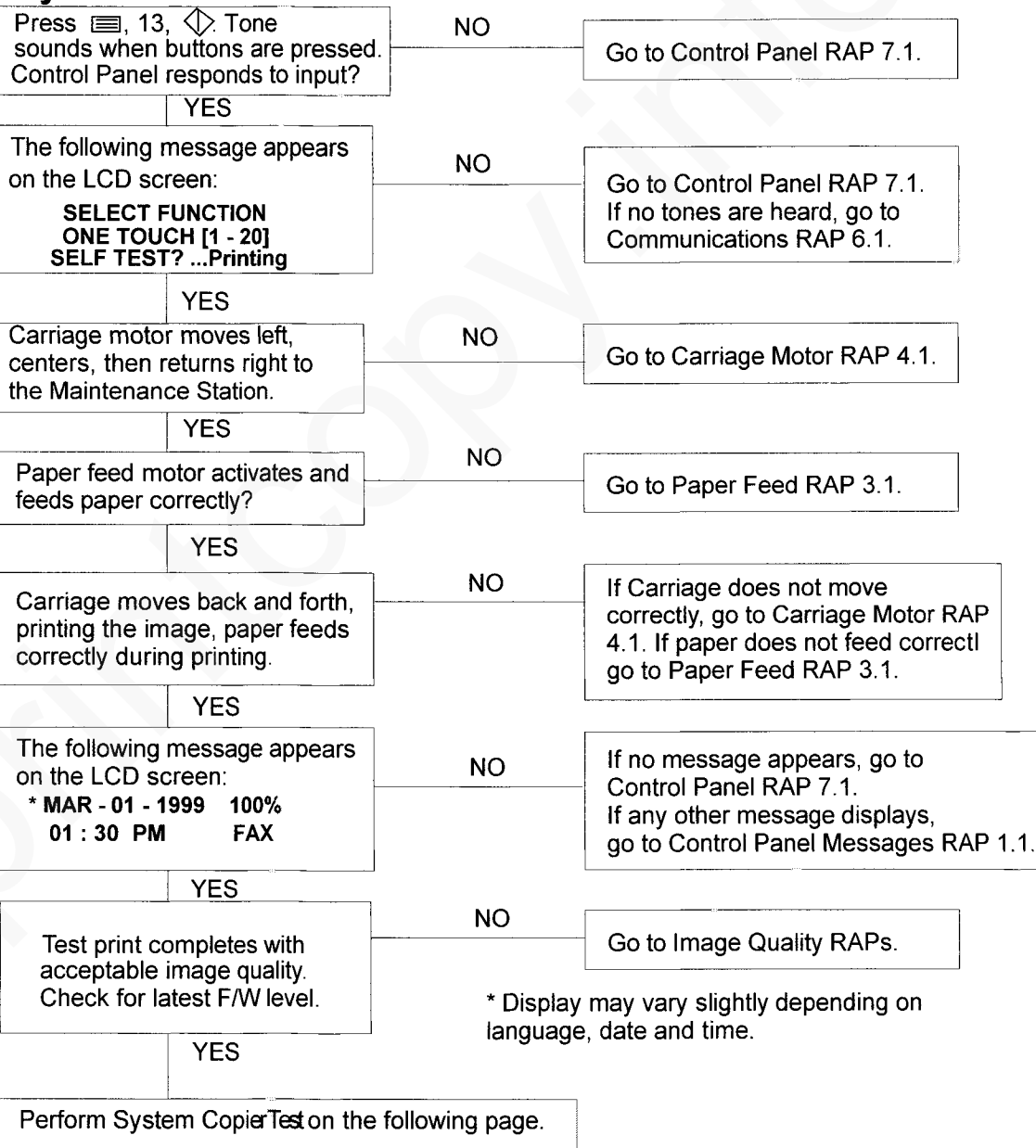
System Check

The initial actions you performed on the previous page performed a quick initial check of the power system, circuit boards, control panel, paper feed, and the printer engine.

After you perform the Initial Actions, perform a system check using the flowcharts on the following pages.

The System Check will help identify any problems and refer you to the appropriate RAP or REP.

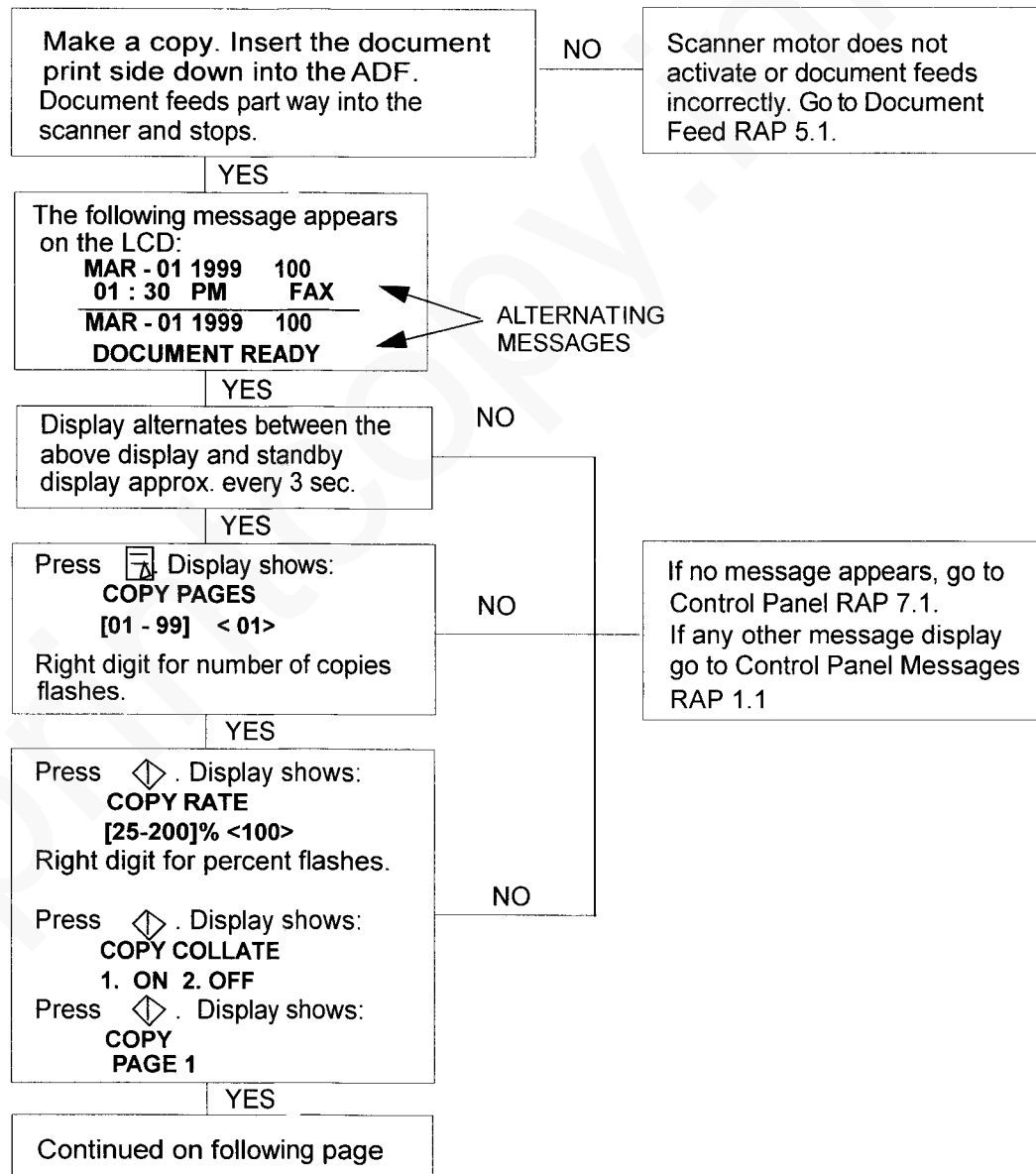After you have repaired any problem, perform this system check again, and then perform the Final Action procedure.

System Check: Self Test

Press ☰, 13, ◇. Tone sounds when buttons are pressed. Control Panel responds to input?
— NO → Go to Control Panel RAP 7.1.

YES ↓

The following message appears on the LCD screen:
**SELECT FUNCTION
ONE TOUCH [1 - 20]
SELF TEST? ...Printing**
— NO → Go to Control Panel RAP 7.1. If no tones are heard, go to Communications RAP 6.1.

YES ↓

Carriage motor moves left, centers, then returns right to the Maintenance Station.
— NO → Go to Carriage Motor RAP 4.1.

YES ↓

Paper feed motor activates and feeds paper correctly?
— NO → Go to Paper Feed RAP 3.1.

YES ↓

Carriage moves back and forth, printing the image, paper feeds correctly during printing.
— NO → If Carriage does not move correctly, go to Carriage Motor RAP 4.1. If paper does not feed correctl go to Paper Feed RAP 3.1.

YES ↓

The following message appears on the LCD screen:
*** MAR - 01 - 1999   100%
01 : 30 PM   FAX**
— NO → If no message appears, go to Control Panel RAP 7.1. If any other message displays, go to Control Panel Messages RAP 1.1.

YES ↓

Test print completes with acceptable image quality. Check for latest F/W level.
— NO → Go to Image Quality RAPs.

* Display may vary slightly depending on language, date and time.

YES ↓

Perform System Copier Test on the following page.

System Check (continued)

Continue the Initial Actions flowchart on this page to check the scanner assembly, LCU, and fax capabilities.

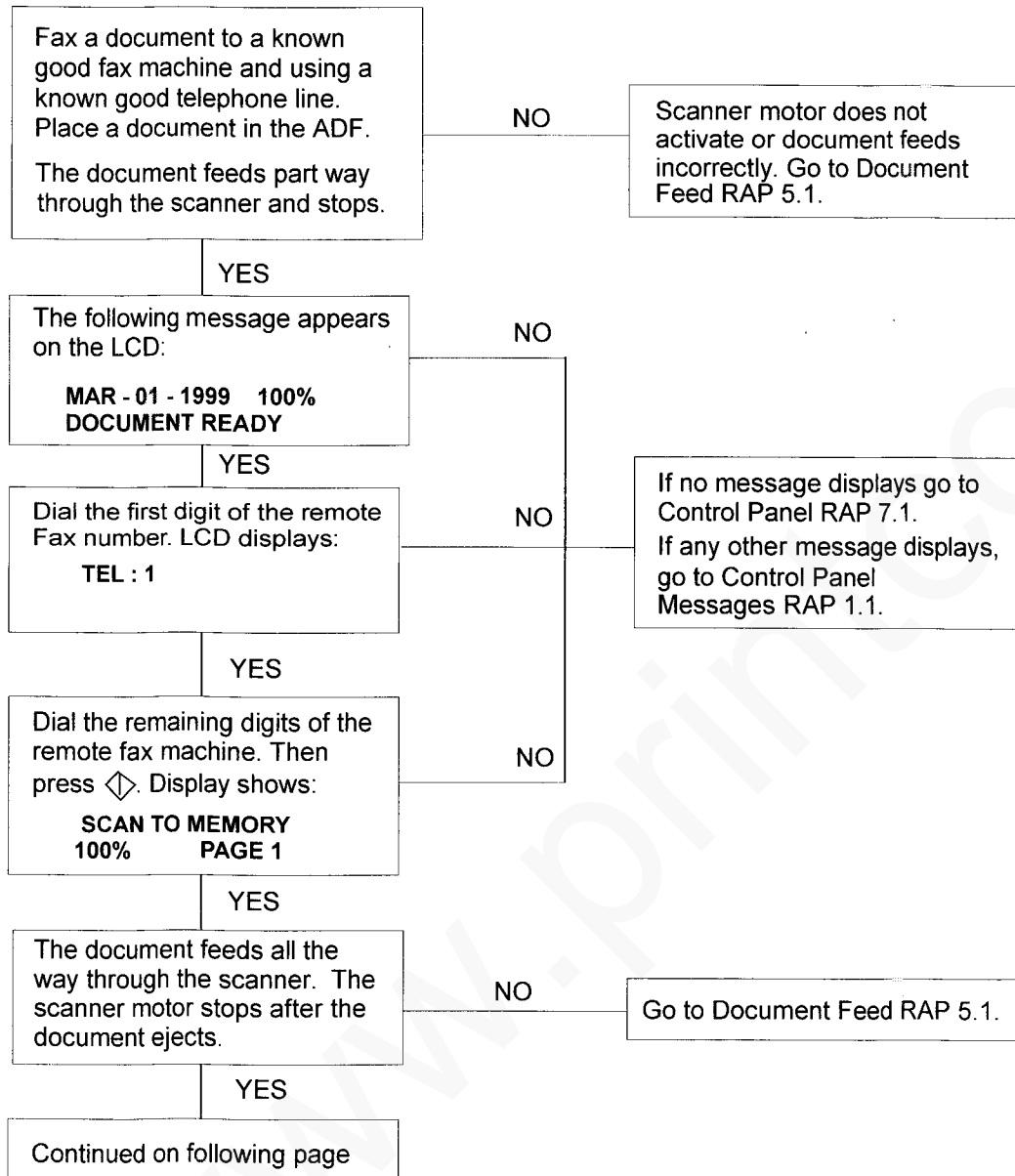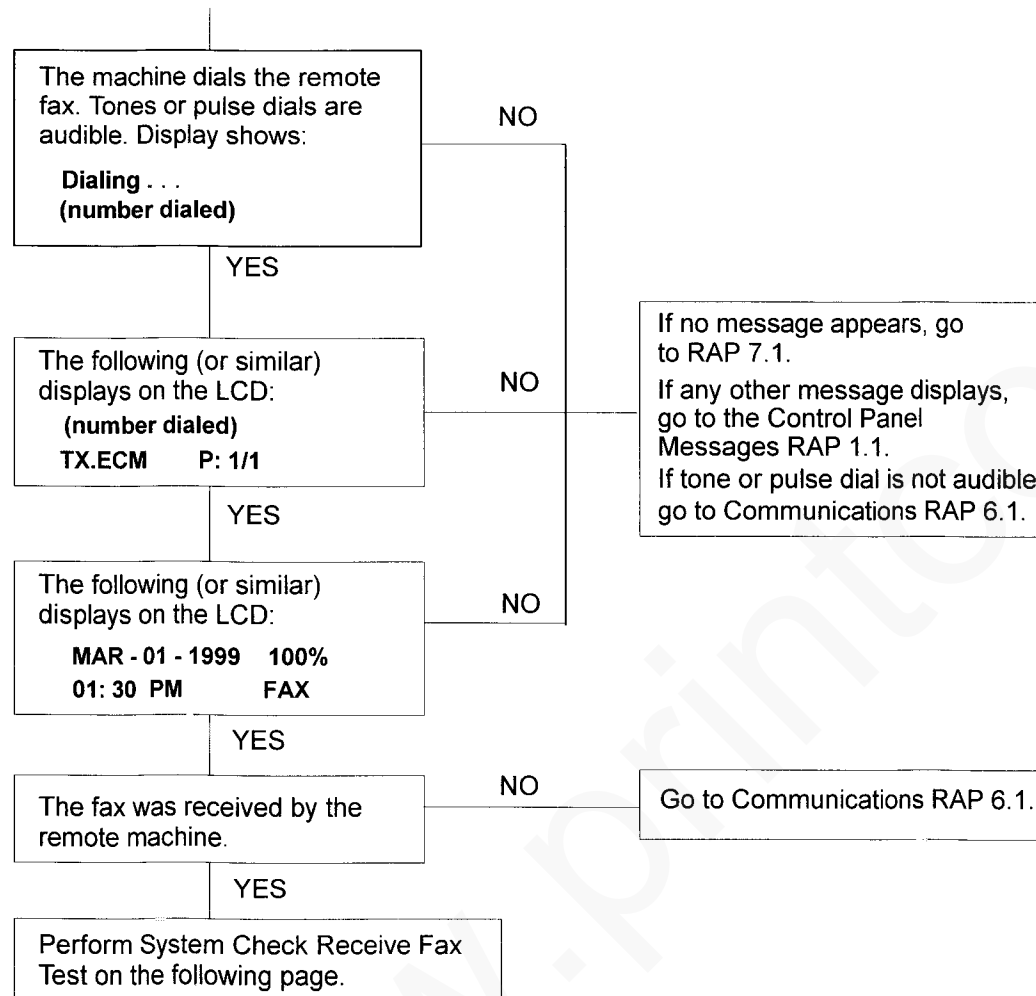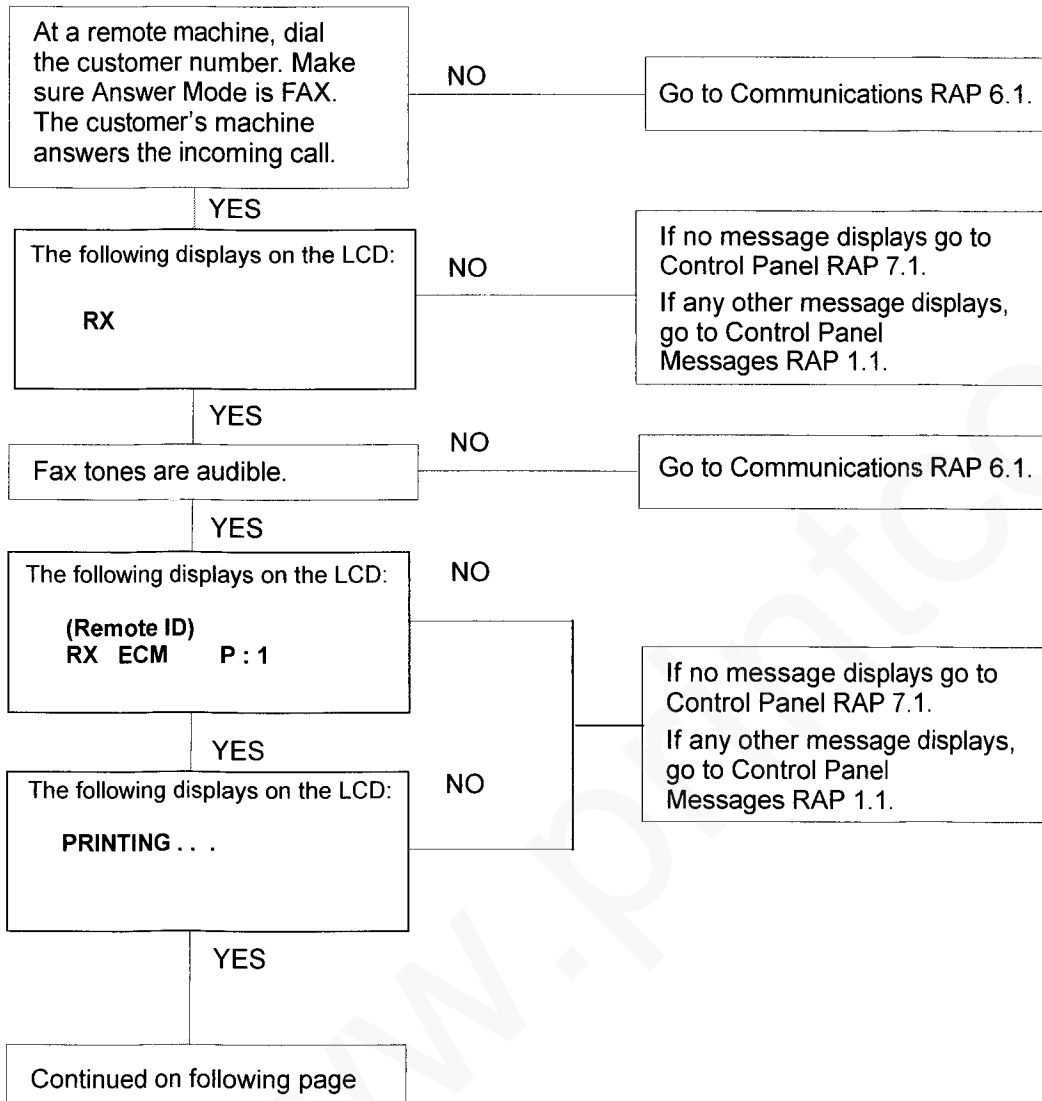## System Check: Copier Test

Make a copy. Insert the document print side down into the ADF. Document feeds part way into the scanner and stops.

— NO → Scanner motor does not activate or document feeds incorrectly. Go to Document Feed RAP 5.1.

YES

The following message appears on the LCD:

MAR - 01 1999   100
01 : 30   PM   FAX

MAR - 01 1999   100
DOCUMENT READY

ALTERNATING MESSAGES

YES

Display alternates between the above display and standby display approx. every 3 sec.

NO

YES

Press [icon]. Display shows:
COPY PAGES
[01 - 99]   < 01>
Right digit for number of copies flashes.

NO

If no message appears, go to Control Panel RAP 7.1.
If any other message display go to Control Panel Messages RAP 1.1

YES

Press ◇ . Display shows:
COPY RATE
[25-200]% <100>
Right digit for percent flashes.

Press ◇ . Display shows:
COPY COLLATE
1. ON 2. OFF
Press ◇ . Display shows:
COPY
PAGE 1

NO

YES

Continued on following page

System Check: Copier Test (continued)

The document feeds all the way through the scanner. The scanner motor stops after the document ejects.	**NO** →	Go to Document Feed RAP 5.1.

↓ YES

Paper feed motor activates and feeds paper correctly?	**NO** →	Go to Paper Feed RAP 3.1.

↓ YES

Carriage moves back and forth, printing the image, paper feeds correctly during printing.	**NO** →	If ink carrier does not move correctly, go to Carriage Motor RAP 4.1. If paper does not feed correctly, go to Paper Feed RAP 3.1.

↓ YES

Copy completes and the following messages displays on the LCD momentarily: **MAR - 01 - 1999 100%** **01 : 30 PM FAX**	**NO** →	If no message displays, go to Control Panel RAP 7.1. If any other message displays, go to Control Panel Messages RAP 1.1.

↓ YES

Image quality is acceptable?	**NO** →	Go to Image Quality RAPs.

↓ YES

Perform System Check Send Fax Test on the following page.

System Check: Send Fax Test

Fax a document to a known good fax machine and using a known good telephone line. Place a document in the ADF.

The document feeds part way through the scanner and stops.

→ NO → Scanner motor does not activate or document feeds incorrectly. Go to Document Feed RAP 5.1.

YES

The following message appears on the LCD:

MAR - 01 - 1999   100%
DOCUMENT READY

→ NO →

YES

Dial the first digit of the remote Fax number. LCD displays:

TEL : 1

→ NO → If no message displays go to Control Panel RAP 7.1.
If any other message displays, go to Control Panel Messages RAP 1.1.

YES

Dial the remaining digits of the remote fax machine. Then press ◁▷. Display shows:

SCAN TO MEMORY
100%   PAGE 1

→ NO →

YES

The document feeds all the way through the scanner. The scanner motor stops after the document ejects.

→ NO → Go to Document Feed RAP 5.1.

YES

Continued on following page

System Check: Send Fax Test (continued)

```
The machine dials the remote           NO
fax. Tones or pulse dials are
audible. Display shows:
    Dialing . . .
    (number dialed)
            |
           YES
            |
The following (or similar)             NO          If no message appears, go
displays on the LCD:                               to RAP 7.1.
    (number dialed)                                If any other message displays,
    TX.ECM       P: 1/1                            go to the Control Panel
            |                                      Messages RAP 1.1.
           YES                                     If tone or pulse dial is not audible
            |                                      go to Communications RAP 6.1.
The following (or similar)             NO
displays on the LCD:
    MAR - 01 - 1999    100%
    01: 30  PM         FAX
            |
           YES
            |
The fax was received by the            NO          Go to Communications RAP 6.1.
remote machine.
            |
           YES
            |
Perform System Check Receive Fax
Test on the following page.
```

System Check (continued)

System Check: Receive Fax test

At a remote machine, dial the customer number. Make sure Answer Mode is FAX. The customer's machine answers the incoming call.

— NO → Go to Communications RAP 6.1.

YES ↓

The following displays on the LCD:

RX

— NO → If no message displays go to Control Panel RAP 7.1.

If any other message displays, go to Control Panel Messages RAP 1.1.

YES ↓

Fax tones are audible.

— NO → Go to Communications RAP 6.1.

YES ↓

The following displays on the LCD:

(Remote ID)
RX   ECM   P : 1

NO

YES ↓

The following displays on the LCD:

PRINTING . . .

— NO → If no message displays go to Control Panel RAP 7.1.

If any other message displays, go to Control Panel Messages RAP 1.1.

YES ↓

Continued on following page

System Check: Receive Fax test (continued)

```
┌─────────────────────────────┐       NO        ┌──────────────────────────────┐
│ Paper feed motor activates  │ ───────────────→│ Go to Paper Feed RAP 3.1.    │
│ and feeds paper correctly?  │                 │                              │
└─────────────────────────────┘                 └──────────────────────────────┘
            │ YES
            ↓
┌─────────────────────────────┐       NO        ┌──────────────────────────────┐
│ Carriage moves back and     │ ───────────────→│ If Carrier does not move      │
│ forth, printing the image,  │                 │ correctly, go to Carriage     │
│ paper feeds correctly        │                │ Motor RAP 4.1.                │
│ during printing.             │                │ If paper does not feed        │
│                              │                │ correctly, go to Paper Feed   │
└─────────────────────────────┘                 │ RAP 3.1.                      │
            │ YES                                └──────────────────────────────┘
            ↓
┌─────────────────────────────┐       NO        ┌──────────────────────────────┐
│ The following displays on    │───────────────→│ If no message displays go to  │
│ the LCD:                     │                │ Control Panel RAP 7.1.        │
│                              │                │                              │
│   MAR - 01 - 1999   100%     │                │ If any other message displays,│
│   01: 30 PM        FAX       │                │ go to Control Panel           │
│                              │                │ Messages RAP 1.1.             │
└─────────────────────────────┘                 └──────────────────────────────┘
            │ YES
            ↓
┌─────────────────────────────┐       NO        ┌──────────────────────────────┐
│ Image quality is acceptable? │───────────────→│ Go to Image Quality RAPs.    │
└─────────────────────────────┘                 └──────────────────────────────┘
            │ YES
            ↓
┌─────────────────────────────┐
│ Continued on the following  │
│ page.                        │
└─────────────────────────────┘
```

System Check: Receive Fax test (continued):

Remote Receive code work — NO → Go to Communications RAP 6.1.

YES

If problem has not been corrected return to Initial Actions.

Subsystem Cleaning and Maintenance

The printer and scanner require periodic cleaning. When you are servicing the WorkCentre, perform the following procedures.

Clean the following printer engine parts

Description	Procedure
Cover	Clean using a lint free tissue and water or Formula A.
Paper Feed and Document Feed Roller	Clean using a lint free tissue, water, and Film Remover.
Maintenance Station	Clean using a lint free tissue and water.
Carriage Shaft	Inspect the Shaft for damage (abrasions, wear marks, burrs). Clean the guide rod using Xerox film remover and a lint free cloth. Next, use a lint free cloth to apply a thin film o grease 70H44 to the rail
ADF Rubber	Inspect for wear and replace as required.

Check all rubber items for wear and hardness.

If worn or harder than normal, replace as required.

Final Actions

Clean the machine's exterior

Clean the exterior of the WorkCentre using a lint free cloth and water or Formula A.

Restore the customer's settings

Do not restore any settings that you suspected were the cause of any problems.

Section Contents

Overview

This section includes repair analysis procedures (RAPs). These procedures aid you in diagnosing the defective subsystem. The RAPs described in this section continue the fault analysis to the replacement unit level.

The RAPs include some corrective information. These RAPs may lead to other RAPs or Repair and Replacement Procedure (REPs).

Electro Static Discharge

Certain components in this product are susceptible to damage from electrostatic discharge. Observe all ESD procedures to avoid component damage.

RAP 1.1 Control Panel Messages

A subsystem failure on the machine will, in most cases, report a message on the control panel.

This RAP consists of a listing of messages and other symptoms that direct you to a RAP to further isolate the problem

This section does not list all possible messages or error codes that appear. Most messages are self explanatory.

See the User Guide for other messages not listed.

WorkCentre Control Panel Messages

Message	Meaning	Operator Action	Technician Action
(R) CARTRIDGE EMPTY (L) CARTRIDGE EMPTY ALL CARTRIDGES EMPTY	The WorkCentre did not detect a Cartridg installed in the position called out in th display.	Remove and reinstall the Cartridge per the User Guide instructions	Go to RAP 4.2.
CHECK CARTRIDGE	The Cartridge is not correctly installed in the machine.	Remove and reinstall the Cartridge per the User Guide instructions	Go to RAP 4.2.
SEND ERROR or RECEIVE ERROR	There is a fax communications problem	Try the operation at a later time. Turn on ECM and try again.	Go to RAP 6.1.
COVER OPEN (480 only)	The Cartridge Cover is open.	Close the Cartridge Cover.	Go to RAP 8.1.
DOCUMENT JAM	The document did not feed proper through the ADF and Scanner.	Ensure Control Panel is closed. Clear and clean the feed rollers and ADF Rubber Pad. Reload the documents and try again.	Go to RAP 5.1.
INK LOW	The Cartridge may be low of ink.	Install the appropriate cartridge	Go to RAP 4.2.
LINE ERROR	Your machine cannot connect with the remote site, or it has lost contact becaus of a problem on the phone line.	Try the operation at a later time. Turn on ECM and try again.	Go to RAP 6.1.
LOAD DOCUMENT	You have attempted to set up an operation that requires loading a document.	Ensure Control Panel is closed. Load a document and try again.	Go to RAP 5.1.
NO LINE CONNECTION	The WorkCentre was not able to detect a dial tone.	Make sure the (LINE) connection is properly connected to a telephone line.	Go to RAP 6.1.
NO PAPER ADD PAPER THEN PRESS >	The WorkCentre is out of paper.	Load up to 100 sheets of 20lb. paper in the APF paper tray. Ensure guides are not pinching paper. After loading paper press any of the four arrow buttons.	Go to RAP 3.1.
PAPER JAM	The print media did not feed properly through the printer.	Press STOP to remove the print media is possible Clean the rollers with a lint free towel moistened with water or alcohol. Reload the print media according to the User Guide instructions.	Go to RAP 3.1
POWER FAILURE	A power failure occurred with documents stored in memory which caused a Power Failure Report to be printed out automatically when power was restored.	Examine the Power Failure Report and determine what was in process at the time of the power failure. Perform the operation that was not successful due to the power failure.	Go to Initial Actions in Section 1 if you suspec there is a problem with the machine.
RETRY REDIAL ?	The WorkCentre was not able to connect to the remote machine or encountered a busy signal.	Wait and let the machine redial or remove you documents and try the operation later.	Go to RAP 6.1.

RAP 2.1 AC Power Check

Note: If any of the AC voltage measurements are not within the specifications, a qualified electrician retained by the customer must make the required repairs. If you later find the condition is not corrected, inform your manager in writing of the improper wiring.

1. **110 VAC**: Voltage at the wall receptacle must be from 90 VAC to 132 VAC between AC hot and AC neutral and between AC hot and GND. Voltage should be less than 3 VAC between GND and neutral (see Figure 2-1).

AC Neutral   GND   AC Hot
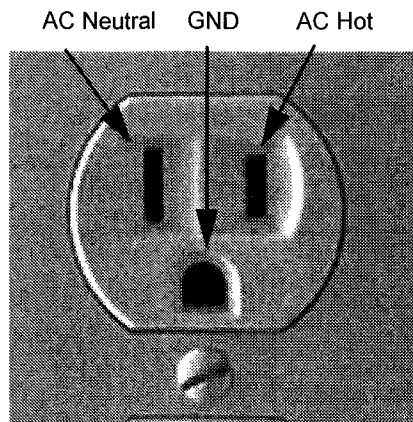
Figure 2-1. 110 VAC Receptacle

2. **220 VAC:** Voltage at the wall receptacle is 180 VAC to 264 VAC between live and neutral and between live and earth.
   Voltage should be 3 VAC or less between earth and neutral (Figure 2-2).

Neutral   Earth   Live   Supply
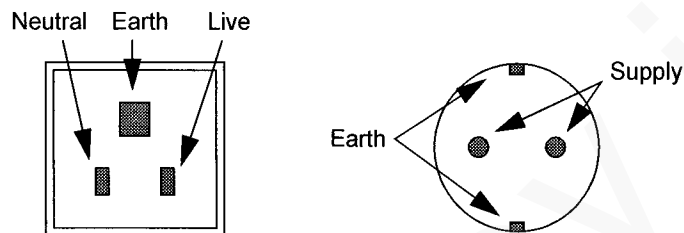
Earth

Figure 2-2. **220 VAC Receptacle**

3. **EUROPE (excluding the UK):** Voltage at the wall receptacle is 180 VAC to 264 VAC between supply pins. Voltage between one supply pin and earth is 197 VAC to 264 VAC. Voltage between the other supply pin and earth is 3 VAC or less (Figure 0-4).

   If the voltage is not correct, notify the customer of the electrical requirements.

4. If the voltage is correct, go to RAP 2.2: Power Supply DC Voltage Check.

RAP 2.2 Power Supply DC Voltage Check

See Parts List 3.1

1. Prepare to test the power supply by performing the following REPs:

   • REP 1.2 Rear Cover Assembly

2. Apply power to the machine.

WARNING

There are exposed areas of high voltage on the power supply. Use caution when working in this area with the multimeter probes.

3. Using a multimeter, place the Common lead to the GND terminal at the left front corner of the power supply (viewed from the rear).

   Place the Positive lead to the following pins on P/J6 on the Main PBA:

   • Pin 6-1 (Red Wire) = +4.35 VDC to +4.65 VDC

   • Pin 6-3 (Red Wire) = +11.1 VDC to +12.3 VDC

   • Pin 6-6 (Blk Wire) = +28.5 VDC to +31.5 VDC

   Result: All voltages are within tolerances?

No: Go to step 4.

Yes: Power supply is good.

4. Disconnect power from the machine

5. Carefully disconnect Power Supply connector J6 from the Main PBA.

6. Apply power to the machine.

7. Perform step 3 voltage checks

   Result: All voltages are within tolerances?

No: Replace the power supply REP 3.4 Power Supply.

Yes: There is no problem with the power supply. The out-of tolerance voltage readings you encountered may be a result of a problem with a circuit board or motor. Go to Step 8.

8. Disconnect J2 from the Main PBA.

   Perform step 3 voltage checks.

   Result: All voltages are within tolerances?

No: Disconnect J1 from the Main PBA. Go to Step 9.

Yes: There's a problem with the Scan Motor. Replace REP 3.3 Scan Motor/Gear Assembly.

9. Perform step 3 voltage checks.

   Result: Power supply readings are within specification?

No: Disconnect J3 from the Main PBA. Go to Step 10.

Yes: There's a problem with the control panel. Replace REP 1.4 Control Panel Assembly.

10. Perform step 3 voltage checks

    Result: Power supply readings are within specification?

No: Disconnect CN1 from the Main PBA. Go to Step 11.

Yes: There's a problem with the CIS assembly. Replace REP 3.2 CIS (Contact Image Sensor).

11. Perform step 3 voltage checks

    Result: Power supply readings are within specification?

No: Disconnect J7 from the Main PBA. Go to Step 12.

Yes: There's a problem with the Parallel Cable Interface PBA. Replace REP 3.6 Parallel Cable Interface PBA.

12. Perform step 3 voltage checks

    Result: Power supply readings are within specification?

No: Disconnect J4 from the Main PBA. Go to Step 13.

Yes: There's a problem with the LIU PBA. Replace REP 3.5 LIU PBA.

13. Perform step 3 voltage checks

Result: Power supply readings ar within specification?

No: Disconnect JP4 from the Main PBA. Go to Step 14.

Yes: There's a problem with the Paper Feed Motor. Replace <u>REP 4.9 Paper Feed Motor Assembly</u>.

14. Perform step 3 voltage checks

Result: Power supply readings are within specification?

No: Disconnect J5 from the Main PBA. Go to Step 15.

Yes: There's a problem with the Carriage Motor. Replace it.

15. Perform step 3 voltage checks

Result: Power supply readings are within specification?

No: Disconnect JP1, JP2, and JP3 from the Main PBA. Go to Step 16.

Yes: There's a problem with the Speaker. Replace <u>REP 1.3 Top Cover Assembly</u>.

16. Perform step 3 voltage checks

Result: Power supply readings ar within specification?

No: WorkCentre 470cx: Replace <u>REP 4.5 Main PBA</u>. End of RAP for 470cx.

No: WorkCentre 480cx: Disconnect J8 from the Main PBA. Go to Step 17.

Yes: There's a problem with the Carriage Assembly or Ink Cartridges. Replace the Cartridges, then <u>REP 4.4 Carriage Assembly</u>. End of RAP for 470cx.

17. Perform step 3 voltage checks

Result: Power supply readings are within specification?

No: Disconnect J10 from the Main PBA. Go to Step 18

Yes: There's a problem with the APF Tray Empty Sensor. Replace <u>REP 4.2 APF Tray Assembly</u>.

18. Perform step 3 voltage checks.

Result: Power supply readings are within specification?

No: Replace <u>REP 4.5 Main PBA</u>.

Yes: There's a problem with the Cartridge Cover Interlock. Replace <u>REP 1.3 Top Cover Assembly</u>.

RAP 2.2 Power Supply DC Voltage Check

WorkCentre 480/470cx

RAP 3.1 Paper Fee

See Parts List 4.1.

This RAP will help isolate media feed problems in the printer.

If paper or other media is not feeding or partially feeding into the printer, check for the following:

- Ensure the specified media is being used with the WorkCentre
- Damaged media
- Damaged or dirty paper feed roller and items in the paper path.

WorkCentre 470cx go to Step 4.

WorkCentre 480cx go to Step 1.

Correct any of these problems if they exist.

1. Power on the WorkCentre without paper loaded in the APF Tray Assembly.

    Result: The following message appears on LCD:

    NO PAPER

No: Make sure the APF Paper Empty Sensor is not jammed in the down position. If the APF Tray Assembly harness is okay, replace the Main PBA REP 4.5 Main PBA.

Yes: Continue with Step 2.

2. Add paper to the APF Tray Assembly.

3. Check wire harness from the Main PBA J8 to the APF Paper Empty Sensor.

    Result: Harness and connections appear good and NO PAPER message goes away?

No: Reconnect the wire harness, or replace REP 4.2 APF Tray Assembly.

Yes: Continue with Step 4.

4. Check the position of the paper feed cam and manually rotate it one complete revolution. Note action of cam

    Result: Cam mechanism operates freely?

No: Replace REP 4.2 APF Tray Assembly.

Yes: Continue with Step 5.

5. Check the Paper Path Sensor and Actuator to ensure proper actuation when paper is feeding.

6. Check voltage between GND and J4-1, J4-2, J4-3, and J4-4 on the Main PBA.

    Result: Voltage is between 26 VDC and 29 VDC?

No: Go to RAP 2.2: Power Supply DC Voltage Check.

Yes: Continue with Step 7.

7. Replace REP 4.9 Paper Feed Motor Assembly. If this does not solve the problem, replace REP 4.5 Main PBA.

NOTE: You may choose to check the paper feed motor for an open motor winding.

Disconnect P4. Table 2-1. gives the resistance values between pins on the motor wiring harness.

Table 2-1. **Paper Feed Motor Winding Resistance**

1st Pin	2nd Pin	Resistance
1	2	11 - 13 ohms
3	4	11 - 13 ohms

If the resistance is too low, then there is a short in the paper feed motor winding. If the resistance is infinite, or too high, then there is an open in the motor winding.

RAP 4.1 Carriage Motor

See Parts List 4.1

1. Check for a loose or damaged wire harness from the Main PBA JP4 to the Carriage Motor.

    Result: Harness and connectors appear good.

No: Reconnect the harness, or replace the Carriage Motor as required.

Yes: Continue with Step 2.

2. Check the voltage between GND and JP4-2 on the Main PBA.

    Result: Voltage is between +27 VDC and +32 VDC?

No: Go to RAP 2.2: Power Supply DC Voltage Check.

Yes: Continue with Step 3.

3. Replace REP 4.4 Carriage Assembly. If this does not solve the problem, replace REP 4.5 Main PBA.

NOTE: You may also choose to check the Carriage Motor for an open motor winding.

Disconnect JP4. Table 2-2. gives the resistance values between pins on the Carriage Motor wiring harness.

Table 2-2.   **Carriage Motor Winding Resistance**

1st Pin	2nd Pin	Resistance
1	2	10 - 20 ohm

If the resistance is too low, then there is a short in the motor winding. If the resistance is infinite, or too high, then there is an open in the motor winding.

RAP 4.2 Ink Cartridges

See Parts List 4.1

1. Check that the ink cartridges are properly seated.

   Result: Cartridges are properly seated and contain ink

   No: Correct the condition.

   Yes: Continue with Step 2.

2. Check the ribbon cables from JP1, JP2 and JP3 on the Main PBA. Make sure they are not damaged or loose.

   Result: The cables and connections are good?

   No: Reconnect the cables, or replace as required.

   Yes: Continue with Step 3.

3. Power on the unit.

   Result: Power-on test reports cartridge problems?

   No: Problem corrected. End of RAP.

   Yes: Go to step 4.

4. Check the voltage at the Main PBA connector J6-3 and GND.

   Result: Voltage is between +11 VDC and +12.5 VDC?

   No: Go to RAP 2.1.

   Yes: Replace REP 4.5 Main PBA. If this does not correct
   the problem, replace REP 4.4 Carriage Assembly.

RAP 5.1 Document Fee

See Parts List 1.1, 2.1 & 3.1.

This RAP will help isolate document fee problems in the ADF and Scanner.

1. Document tries to feed.

No: Go to Step 5.

Yes: Inspect the documents being used to see if they meet document specifications.

- Check the White Roller, Scan Drive Roller and ADF Roller assemblies for wear, damage, contamination or hardness

- Check the ADF Rubber Pad for excess wear or contamination.

- Clean the rollers and pad with a lint free towel moistened with water or alcohol.

2. Try to make a copy.
    Result: Document now feeds?

No: Check the ADF and scanner paper path for burrs and abrasions.
    Correct problems found.
    Continue with Step 3.

Yes: Problem corrected.

3. Try to make a copy.
    Result: Document now feeds?

No: Replace REP 2.1 ADF Rubber Pad. If problems still occur, replace REP 3.1 Rollers (ADF and Drive Rollers, and Document Exit Shaf Assemblies and REP 1.1 White Roller Assembly. Continue with step 4.

Yes: Problem corrected.

4. Try to make a copy.
    Result: Document now feeds?

No: Continue with Step 5

Yes: Problem corrected.

5. Open the Control Panel and check that the two sensor actuators, located on the back of the Control Panel, move freely
    Result: Switches operate freely?

No: Correct the condition, or replace REP 1.4 Control Panel Assembly.

Yes: Continue with Step 6.

6. Check the wiring harness from the Main PBA connector J2 to the Scanner Motor.
    Result: Wiring harness is securely connected?

No: Connect the wiring harness securely to connector J2.

Yes: Continue with Step 7.

7. Power on the unit. Check the voltage from Main PBA connector J2-1, J2-2, J2-3, J2-4 and GND.
    Result: Voltage is +27 VDC in standby and goes toward +15 VDC during Scanner Motor drive.

No: Perform RAP 2.2: Power Supply DC Voltage Check.

Yes: Replace REP 3.3 Scan Motor/Gear Assembly. If this does not solve the problem, replace REP 4.5 Main PBA.

NOTE: You may choose to check the Scanner Motor for an open motor winding.

Disconnect J2. Table 2-3. gives the resistance values between pins on the scanner motor wiring harness.

Table 2-3. **Scanner Motor W Resistance**

1st Pin	2nd Pin	Resistance
1	2	5 - 7 ohms
3	4	5 - 7 ohms

If the resistance is too low, then there is a short in the scanner motor winding. If the resistance is infinite, or too high, then there is an open in the motor winding.

RAP 6.1 Communications

See Parts List 3.1.

1. Check the wire harnesses and connections from the Main PBA connector J7 to the LIU PBA, LIU connector P3 to telephone line connector, and the telephone connection.

    Result: Connections secure?

No: Reconnect wire harnesses as required.

Yes: Continue with Step 2.

2. Is Speaker volume turned on?

No: Turn on speaker.

Yes: Continue with step 3.

3. Enter Service Mode by pressing▤ , #, 1, 9, 3, 4.

4. Press ▤, 04,◇, ◇, V, ◇, V, ◇, V ◇, V, ◇, V, ◇, V, ◇, V, ◇, V, ◇, V, ◇, V, ◇ , V,◇ , V, △, △, △ .
    Run the modem test. Listen for tones and signals to vary as you cycle through the test.

    Result: Test passed?

No: Disconnect J5 to Speaker. The resistance of the Speaker coil from J5-1 to J5-2 is 8 ohms. If incorrect, replace REP 1.3 Top Cover Assembly.

Yes: Continue with Step 5.

5. In Service Mode, run the DTMF test by pressing ▤ , 04, ◇. Press all keypad digits and check display for correct response.

    Result: Test passed?

No: Replace REP 4.5 Main PBA.

Yes: Continue with Step 7.

6. Connect the machine to a known, good telephone line. Send and/or receive a fax.

    Result: Machine transmits and/or receives the fax

No: Replace REP 3.5 LIU PBA and retest. If this does not solve the problem, replace REP 4.5 Main PBA.

Yes: End of RAP.

RAP 6.2 PC Connectivity

This RAP tests the communication betwee the WorkCentre's parallel port (Centronics) and the PC.

1. Check the cables from Main PBA connector CN1 to the Parallel Cable Interface PBA CN1. From Parallel Cable Interface CN2 to the customer's PC.

   • The cable must be an IEEE 1284 compliant cable no longer than 25 feet.

   • The cable must be securely connected to the WorkCentre Centronics port and the customer's PC parallel port.

   • The connection must be a direct connection, i.e., not routed through a switch box or other device.

2. Power on the WorkCentre.

3. At the PC, exit Windows to DOS.

4. At the customer's DOS system prompt, type the following:

```
copy con lpt1: <return>
Testing 1234   <return>
<Ctrl-Z>       <return>
```

Result: Text "Testing 1234" prints on the WorkCentre?

No: Recheck the parallel cable and cable connections. Replace the cable with a known good cable. If this does not correct the problem, replace REP 4.5 Main PBA, then REP 3.6 Parallel Cable Interface PBA.

Yes: End of RAP. Exit DOS and return to Windows.

RAP 7.1 Control Panel

See Parts List 4.1.

This RAP will isolate a Control Panel problem to the failed component.

1. Power on the unit.

Check the voltage between J1-2 and J1-1 on the Main PBA.

> Result: Voltage is between +4.35 VDC and +4.65 VDC?

No: Perform RAP 2.2: Power Supply DC Voltage Check.

Yes: Replace REP 1.4 Control Panel Assembly. If this does not correct the problem, replace REP 4.5 Main PBA.

RAP 8.1 Cartridge Cover Interlock (480 Only)

See Parts List 1.1.

1. Check for a loose or damaged cable from J10 on the Main PBA.

    Result: Harness and connections appear good?

No: Reconnect the harness, or replace <u>REP 1.3 Top Cover Assembly</u>.

Yes: Continue with Step 2.

2. Disconnect J10 from the Main PBA Check for continuity between J10-1 and J10-2 with the ADF Door closed and infinity with the ADF Door opened.

No: Replace <u>REP 1.3 Top Cover Assembly</u>.

Yes: Replace <u>REP 4.5 Main PBA</u>.

RAP 9.1 ROM Test

This RAP tests the WorkCentre's ROM

The WorkCentre is tested during system startup. However, you can run a ROM test from the service menu.

1. Power on the machine.
2. In the Service Mode, perform the ROM test by pressing 🗐, 01, V, V, V, V, V, V, V, ◇

   Result: Test passed?

No: Replace REP 4.5 Main PBA.

Yes: End of RAP.

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Section Contents

Introduction

The Image Quality section is used to identify image quality problems.

IQRAP 1 Image Defect Table

Print SELF TEST:

1. Load paper into the APF.

2. Press ▤, 13, ◇ .

3. Examine the SELF TEST for quality defects listed in Defect column of the following table.

Generally quality problems are caused by:

- non-approved paper or other media
- out-of-alignment Cartridge
- a defective or dirty Cartridge
- incorrect type of Cartridge installed
- paper feed problems
- defective Encoder
- CIS aging
- dirty roller
- dirty platen

Use your best judgement to determine the cause of a quality problem.

Make a COPY:

1. Load 82P151 into the ADF.

2. Press ▤ , ▤ .

3. Examine the copy for quality defects listed in column 1 of the following table.

Defect	Cause	Solution
Blank print	Print head	Remove and check for tape covering th Cartridge print head nozzles. Reinstall th Cartridge. Press ▤ , 13, V, V, △ and to clean and restore the Cartridge. If the problem still exists, replace the Cartridge. Go to IQRAP 2.
White horizontal lines and streaks	The Cartridge nozzles may be blocked.	Press ▤, 13, V, V, △ to clean and restore the Cartridge. If the problem still exists, replace the Cartridge. Go to IQRAP 2.
Print is faint or missing.	A non-recommended paper is being used or the paper is damp. Defective Cartridge. The ink supply may b nearly empty. The Cartridge nozzles may be blocked.	Replace the paper. Press ▤ , 13, V, V, △ and to clean th Cartridge. Print a new SELF-TEST. If the print is still faint, perform the cleaning procedure 2 more times. If the problem still exists, replace the Cartridge. Go to IQRAP 2.
Blurry or jagge vertical line	Cartridge is out of alignment. Paper	Align the Cartridge ▤ , 13, V, △ an perform adjustment. If the problem still exists, replace the Cartridge. Use the opposite side of the paper. Go to IQRAP 2.
Print image is clipped or off the edge of the media	Print off the edge of the media Document margins may exceed printer margins	Make sure the printer driver setup has the correct selection for media size and type Adjust the margins in the application as necessary.
Vertical white lines on print after copy or scan	Foreign matter on CIS glass or plastic platen	Clean both the CIS assembly glass and White Roller. Examine the CIS assembly and White Rollerfor scratches, cuts and wear. Align the Cartridge ▤ , 13, V, △ and perform adjustment. Go to IQRAP 2 for print problems. Go to IQRAP 3 for scan problems.

Defect	Cause	Solution
Vertical offse overtype (a line of type prints over part of the preceding line)	A damaged or strippe gear or roller is preventing the media from advancing properly.	Replace the gear or roller. If that does no solve the problem go to RAP 3.1.
Vertical black lines during copy or scanning.	Damaged, contaminated or defective CIS.	Clean the CIS, Platen Glass and White Roller. Perform ADJ 3.1 Adjust CIS Shading. Go to IQRAP 3.
Black Copy	CIS defective	Go to IQRAP 3.
Smudged or dark characters	Paper incorrect type Paper not feedin straight. Cartridge may need cleaning.	Replace the paper. Press ▤ , 13, V, V, ◇ and to clean th Cartridge. Print a new SELF TEST. If the print is still faint, perform the cleaning procedure 2 more times. If the problem still exists, replace th Cartridge.
Incorrect colors printed on received FAX and during copy mode.	Incorrect type of print cartridge installed fo operation being performed. Such as: Photo cartridge installed during normal printing	Install the proper print cartridge required for the type of operation being accomplished Go to IQRAP 2.

IQRAP 2 Print Quality

See Parts List 4.1

1. Remove the Cartridges

2. Check that the proper print cartridges are install for the type of print required.

3. Clean the head of the cartridge with a lint free cloth moistened with warm water.

4. Install the Cartridges.

5. Clean the Cartridges using the CLEAN HEAD procedure. 🖼 , 13, V, V, ◇ . Do this 2 times.

6. Make a test print.

    Result: Test print is blank

No: Go to step 12.

Yes: Continue with Step 7.

7. Replace the defective Cartridge.

8. Make a test print.

    Result: Test print is still blank?

No: End of RAP.

Yes: Continue with Step 9.

9. Check the Carriage ribbon cables JP1, JP2 and JP3 from the Main PBA f damage. Reconnect or replace Carriage Assembly as required 17Carriage Assembly.

10. Make a test print.

    Result: Test print is still blank?

No: End of RAP.

Yes: Continue with Step 11.

11. Replace <u>REP 4.4 Carriage Assembly</u>. If problem has not been corrected replace <u>REP 4.5 Main PBA</u>.

12. Perform the Cartridge ARRANGE ALIGNMENT procedure.

    🖼, 13, V, ◇ .

IQRAP 3 Scan Quality

See Parts List 3.1, 4.1.

An entirely black print of a scanned document or black streaks where white should have been is indicative of a CIS, scanner problem.

1. Power on the unit.

2. Check the voltage between J3-3 and GND on the Main PBA.

   Result: Voltage is between +4.35 VDC to +4.65 VDC.

   No: Perform RAP 2.2: Power Supply DC Voltage Check on page 2-12.

   Yes: Continue with Step 3.

3. Check the voltage between J3-12 and GND on the Main PBA.

   Result: Voltage is between +11.1 VDC and +12.3 VDC?

   No: Perform RAP 2.2: Power Supply DC Voltage Check on page 2-12.

   Yes: Check CIS harness and replace if damaged. Otherwise, replace REP 3.2 CIS (Contact Image Sensor). If this does not correct the problem, replace REP 4.5 Main PBA.

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Section Contents

Introduction

Introduction

Overview

The Repair/Adjustment section of the Service Manual provides information that enables the Service Representative to restore the product to within specifications after fault isolation.

The section contents lists, in sequence, all the items of the section, with page references. Each entry in the section contents appear exactly as it appears in the manual.

Repair Procedures

This repair subsection contains instructions for removal and replacement tasks. A removal and/or replacement task is included when it is not obvious how components are removed and replaced, or when special conditions (such as an adjustment) must be met during these tasks.

Step-by-step removal procedures for a specific component or assembly are provided.

Illustrations and photographs are used to assist you with the procedures. You should refer to the specific parts list illustration (listed under the repair title) for locating most components within a procedure.

REP 1.1 White Roller Assembly

Parts List: 1.1

Disconnect the power cord.

Removal

1. Open the control panel.

2. Push the bushing on both ends of the roller slightly inward, then rotate it until it reaches the slot as shown below. Then lift the roller out.
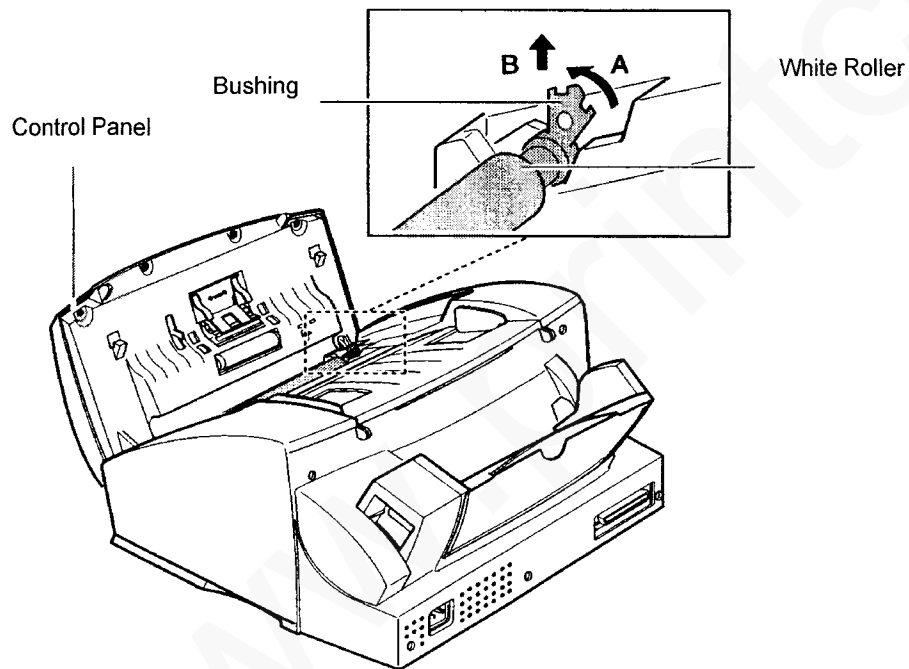
Note: Check the roller for any dirt. If dirty, wipe it off with soft cloth dampened with water or alcohol. If the roller is heavily worn, replace it with a new one.

Replacement

1. Reinstall the components in the reverse order

REP 1.2   Rear Cover Assembly

Parts List: 1.1

Disconnect the power cord.

⚠️

Removal

1. Disconnect the parallel cable and telephone lines.

2. Holding the paper guide, move it in the direction of arrow.

Paper
Guide
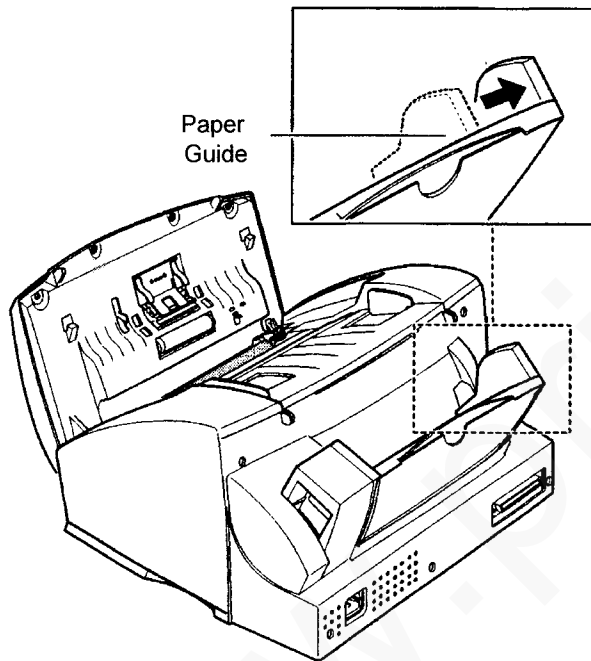
3. Remove the five screws shown below. Remove the screw and the storage unit on the WorkCentre 480.
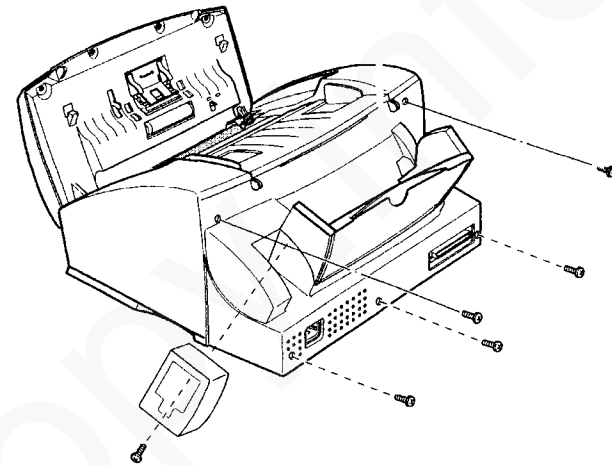
4. Holding the rear cover assembly, remove it by rotating it up to be released properly.

Rear Cover Assembly
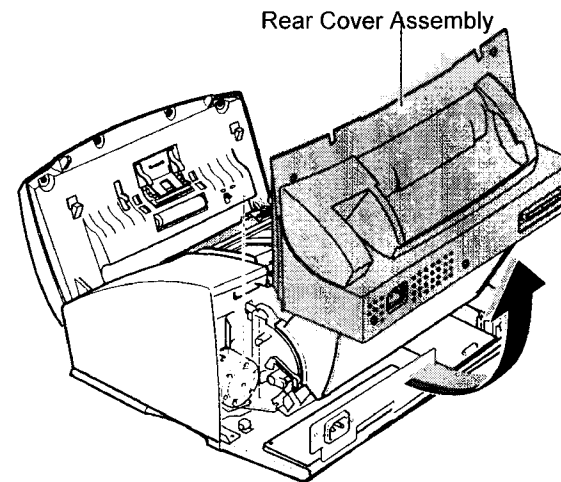
Replacement

1. Reinstall the components in the reverse order

REP 1.3   Top Cover Assembly

Parts List: 1.1

⚠️

Disconnect the power cord.

Removal

1. Open the control panel and open the ADF Door

2. Remove the White Roller Assembly (REP 1.1 White Roller Assembly)

3. Remove the Rear Cover Assembly (REP 1.2 Rear Cover Assembly).

4. Remove the nine screws shown below.
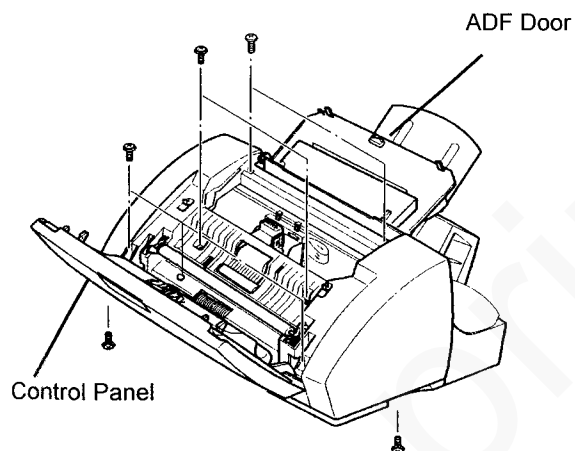
5. Disconnect the Speaker harness (P5) from the Main PBA. On the WorkCentre 480 disconnect the ADF Door Interlock harness (P10) from the Main PBA.

6. Take off the Top Cover Assembly.

Top Cover Assembly

ADF Door
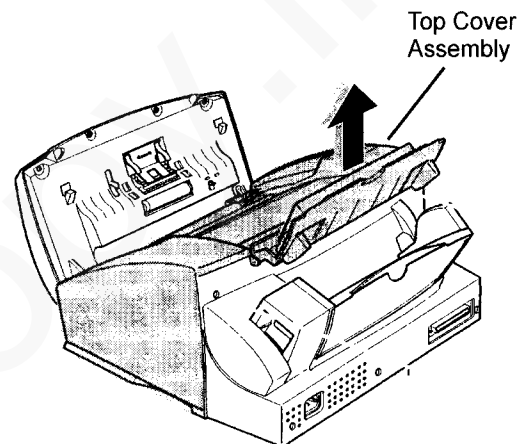
Control Panel

Replacement

1. Reinstall the components in the reverse order

REP 1.4   Control Panel Assembly

Parts List: 1.1

Disconnect the power cord.

⚠️

Removal

1. Remove the Top Cover Assembly (REP 1.3 Top Cover Assembly).

2. Disconnect the control panel connector from the Main PBA.

3. Turn the ADF restraint 90 degrees as shown below and take off the Control Panel Assembly.
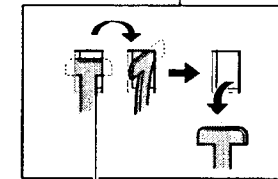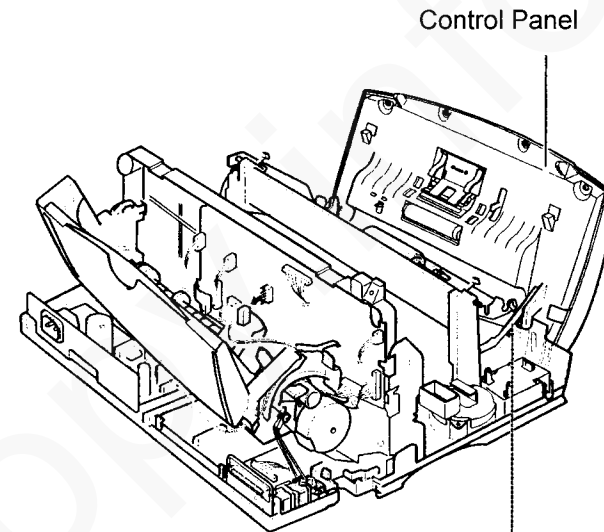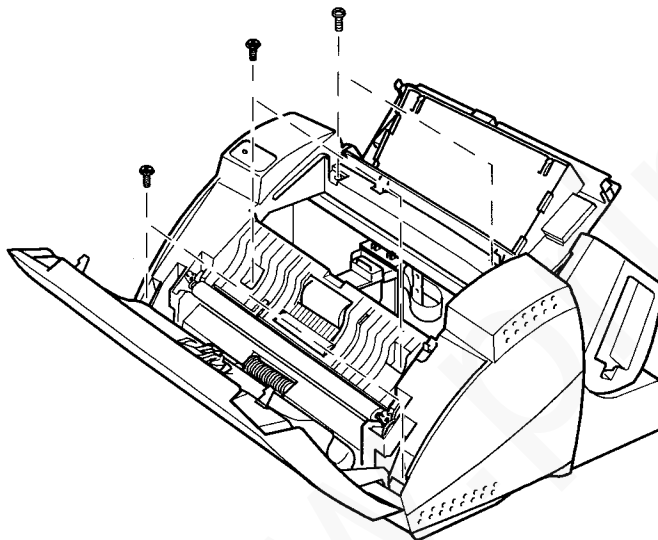
Control Panel

ADF Restraint

4. Remove the four screws securing the Control Panel Assembly to the Upper Scanner Assembly.

Replacement

1. Install the Control Panel Assembly under the three tabs at front of control panel. Reinstall four screws.

2. Reinstall the components in the reverse order

REP 2.1 ADF Rubber Pad

Parts List: 2.1

Disconnect the power cord.

⚠

Removal

1. Open the Control Panel Assembly

2. Insert a flat blade screw driver into the slot as shown below, and release the latches. Take out the Rubber Holder, ADF Sheet, and the Rubber Pad.
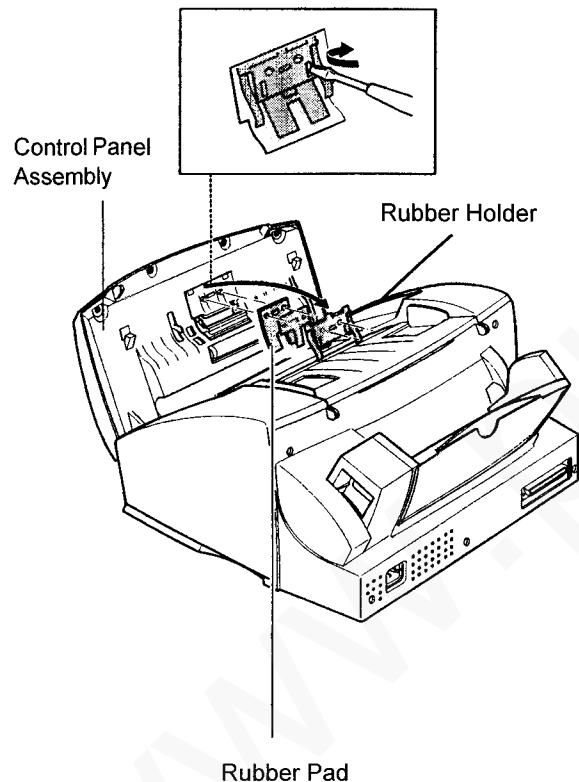
Replacement

1. Reinstall the components in the reverse order, observing the following:

- When you reassemble the Rubber Pad, be sure that the Rubber Pad, ADF Sheet and Rubber Holder fit into the Guide Boss and the Rubber Holder latches fit into the corresponding holes. Push firmly until both latches click.

- Clean the surface of the Rubber Pad with alcohol. Check the Rubber Pad for wear. If the wear reaches 1/2 the original thickness, replace it with a new one.

Guide Boss

Control Panel Assembly

Rubber Holder

Rubber Pad
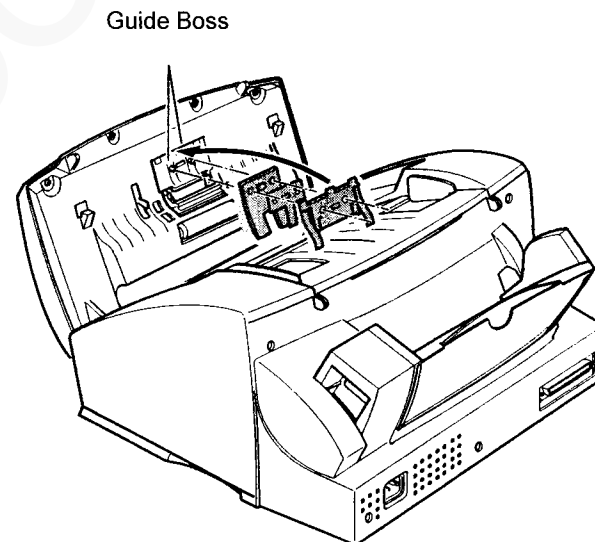
REP 3.1   Rollers (ADF and Drive) and Document Exit Shaft Assemblies

Parts List: 3.1

![warning symbol] Disconnect the power cord.

Removal

1. Remove the Top Cover Assembly (REP 1.3 Top Cover Assembly).

2. Remove the rollers from the base assembly.

Replacement

1. Reinstall the components in the reverse order

    Note: Before replacing the components, clean the surface of the rollers with alcohol. After wiping them, you must dry them completely.

ADF Roller Assembly

Drive Roller Assembly

Document
Exit Shaft
Assembly

REP 3.2 CIS (Contact Image Sensor)

Parts List: 3.1

Disconnect the power cord.

Removal

1. Remove the Top Cover Assembly (REP 1.3 Top Cover Assembly).

2. Remove the Drive Roller shown below.

3. Remove the screw securing the CIS Assembly.

4. Disconnect the CIS Harness. Remove the CIS Assembly.

5. Remove the one screw from the bottom of the CIS Assembly to release the CIS from the bracket.
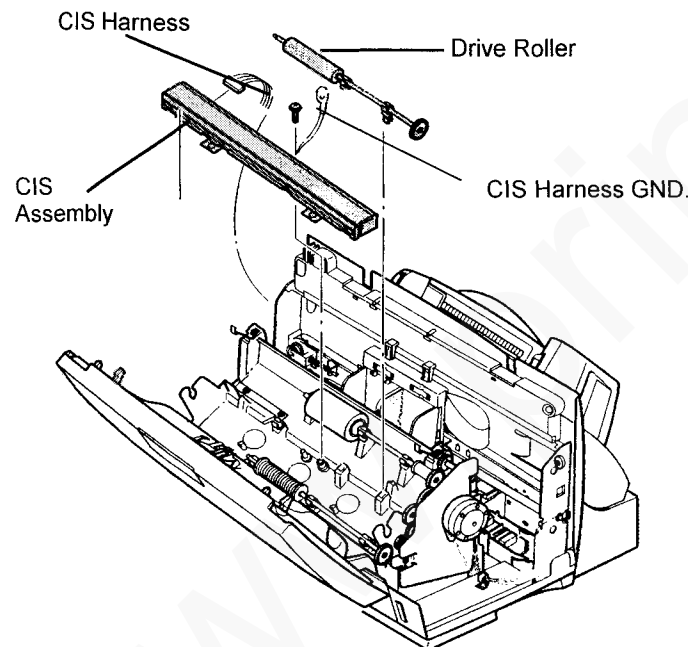
Note: Be careful not to lose the springs.

Note: Check the glass surface of the CIS for any stain or scratches. If stained, wipe off with alcohol. If it is heavily stained or scratched, replace it with a new one.
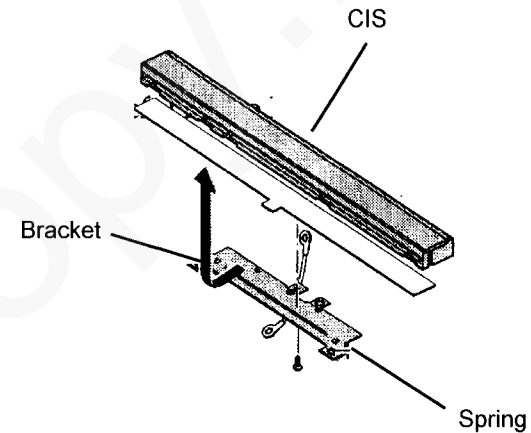
Replacement

Note: Insure that the CIS Bracket remains around the locating posts during insertion of screw. Push down on CIS to make sure it is free after inserting screw. If White Roller is difficult to install check the CIS for proper replacement.

1. Reinstall the components in the reverse order

2. Perform Adj 3.1 Adjust CIS Shading.

REP 3.3   Scan Motor/Gear Assembly

Parts List: 3.1

Disconnect the power cord.

⚠

Removal

1. Remove the Top Cover Assembly (REP 1.3 Top Cover Assembly).

2. Disconnect motor connector P2 from the Main PBA. Make sure the harness is released from the hooks securing the harness as shown below.

Hook1

Main PBA

Motor Harness

Hook2

3. Remove the two screws as shown below and take out the Scan Motor/Gear Assembly.

Scan Motor/Gear Assembly

4. Disconnect the ground wire from the right side of the Main Frame.

Replacement

1. Reinstall the components in the reverse order

REP 3.4   Power Supply

Parts List: 3.1

Disconnect the power cord.

Removal

1. Remove the Rear Cover Assembly (REP 1.2 Rear Cover Assembly).

2. Disconnect the Power Supply connector P6 from the Main PBA. Make sure the harness is released from the hooks.

Connector P6   LF Bracket
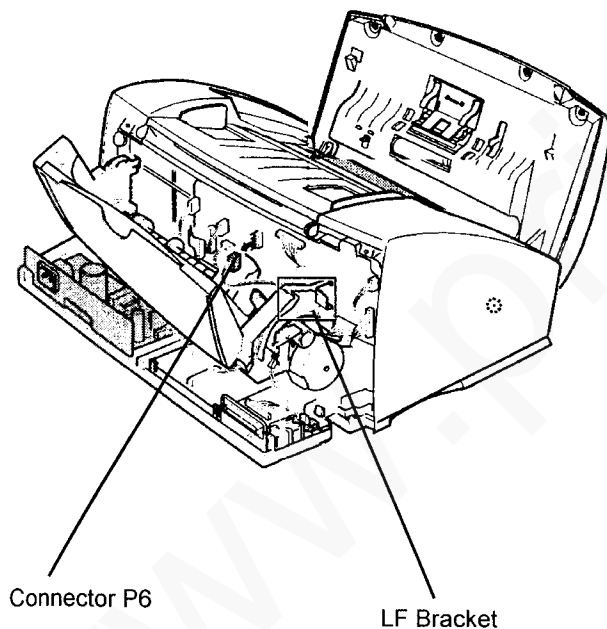
3. Remove the screw securing the ground wires to the bracket as shown.
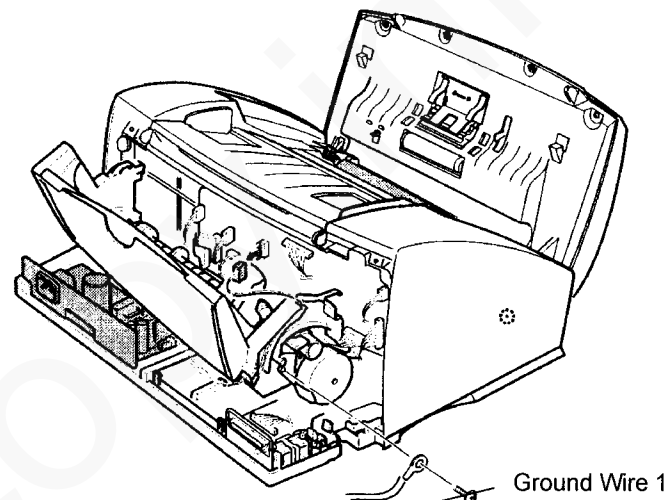
Ground Wire 1

4. Remove the screw securing the ground wire to the Main Frame as shown. Make sure the harness is released from the hook.

Ground Wire 2

Power Supply

Main Frame

REP 3.4 Power Supply

WorkCentre 480/470cx
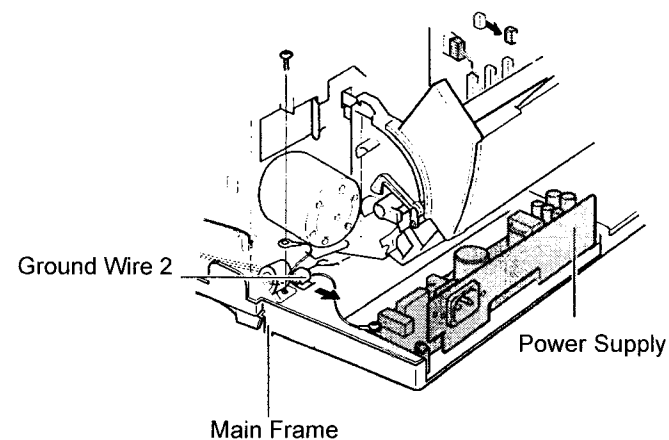
5. Pushing down the hooks on both ends, pull out the Power Supply.

Power Supply

Hook
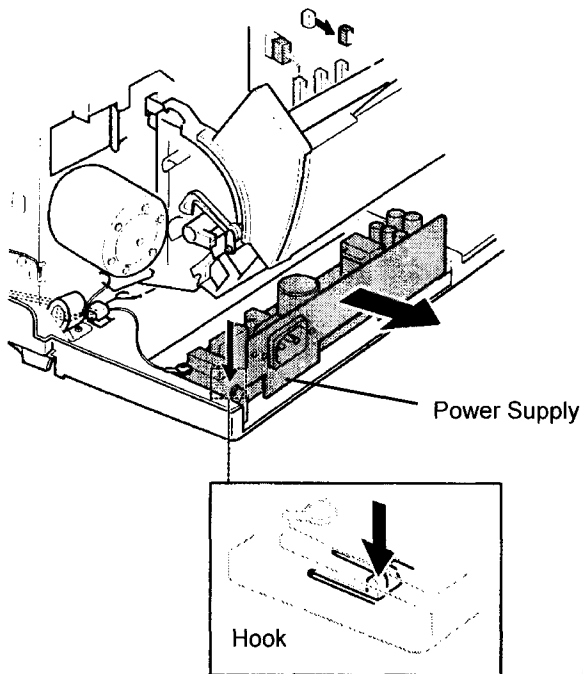
Replacement

1. Reinstall the components in the reverse order.

REP 3.5   LIU PBA

Parts List: 3.1

Disconnect the power cord.

Removal

1. Remove the Rear Cover Assembly (REP 1.2 Rear Cover Assembly).

2. Remove the screw securing the ground wires to the left rear side of the Main Frame.

3. Disconnect the LIU PBA connector P7 from the Main PBA.

Connector P7

LF Bracket

Ground Wires (2)
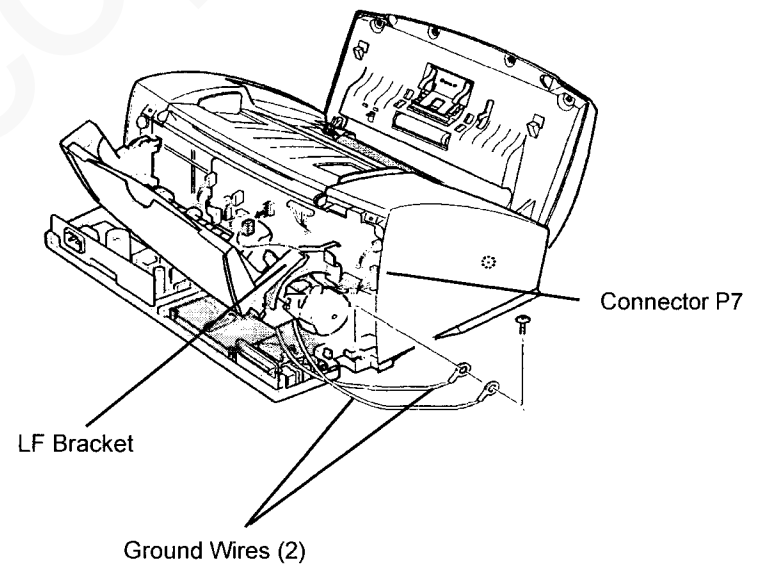
4. While pulling the latching snaps locking the PBA outward, push the LIU PBA up to remove.

LIU PBA

Latching snaps
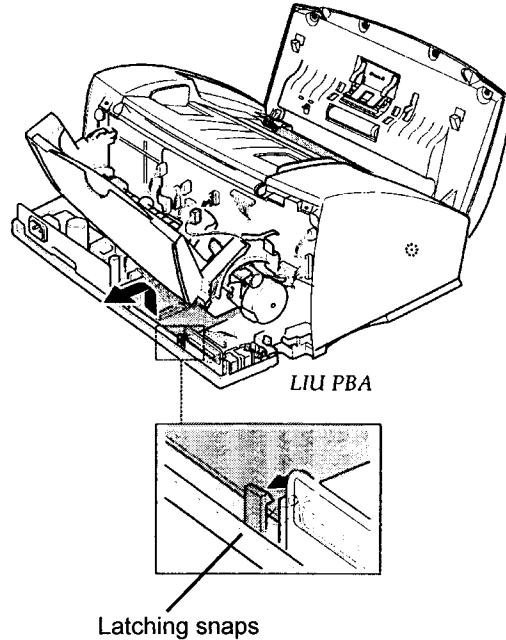
5. Disconnect the remaining connectors from the LIU PBA.
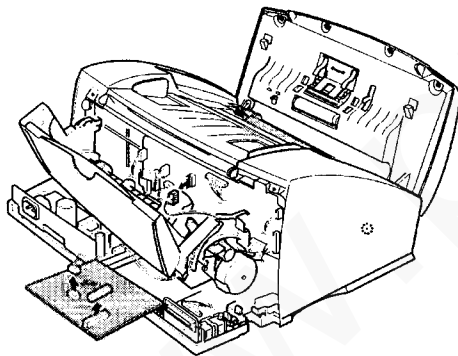
Replacement

1. Reinstall the components in the reverse order.

REP 3.6 Parallel Cable Interface PBA

Parts List: 3.1

Disconnect the power cord.

Removal

1. Remove the Rear Cover Assembly (REP 1.2 Rear Cover Assembly).

2. Disconnect Parallel Interface connector CN1 from the Main PBA.

3. Remove screw securing the ground wires to the end of the Main Frame.

4. Remove screw and remove the Parallel Cable Interface PBA.

Connector CN1

Ground Wires (2)
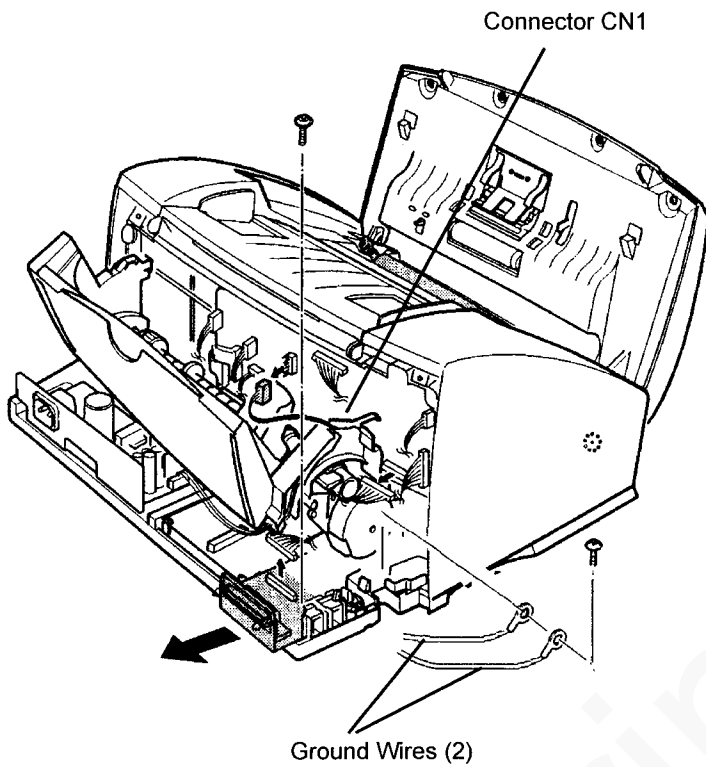
Replacement

1. Reinstall the components in the reverse order.

REP 4.1   Printer Assembly
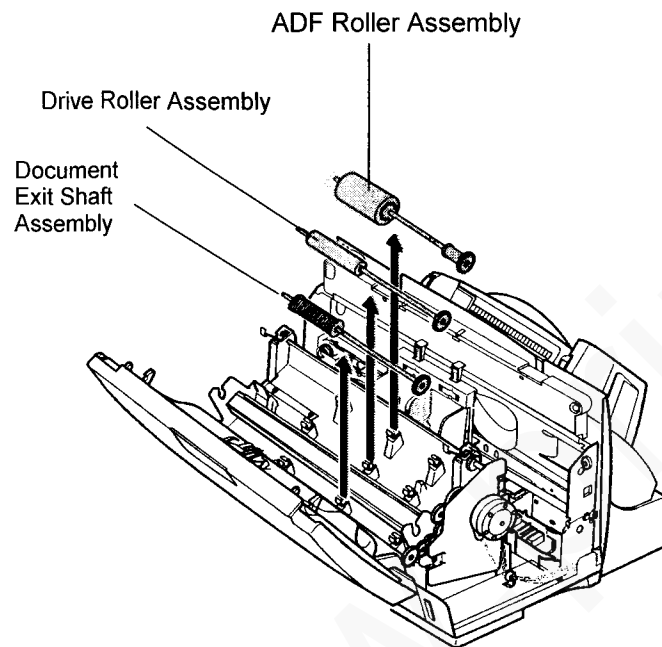
Parts List: 4.1

Disconnect the power cord.

⚠️

Removal

1. Remove the Top Cover Assembly (REP 1.3 Top Cover Assembly).

2. Remove the three screws securing the printer Assembly.

3. Disconnect the Control Panel, LIU, CIS, Power Supply, Scan Motor and Parallel Interface PBA connectors from the Main PBA.

4. Disconnect the ground wire at the right end of the Printer Assembly next to the Carriage Motor.

5. Disconnect the ground wire at the left end of the Printer Assembly next to the Paper Feed motor.

6. Remove the Printer Assembly.

Replacement

1. Reinstall the components in the reverse order. Be sure to install the Main Frame under the two tabs on the Base Assembly.

    Note: When you reassemble the unit, do not pinch or short the wire harnesses.
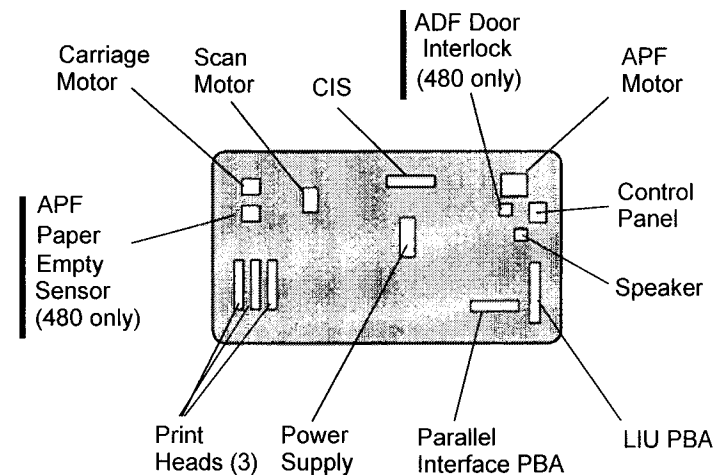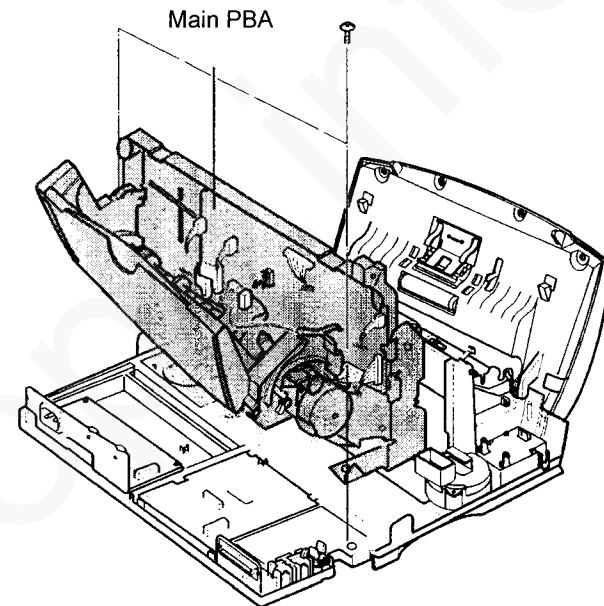
REP 4.2 APF Tray Assembly

Parts List: 4.1

Disconnect the power cord.

Removal

1. Remove the Rear Cover Assembly (REP 1.2 Rear Cover Assembly).

2. Disconnect P4 and P8 (480 only) connectors from the Main PBA.

3. Remove the three screws shown below.
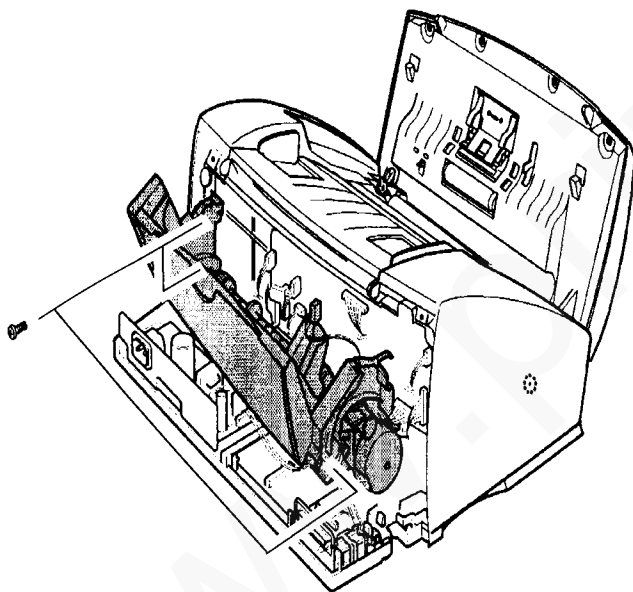
4. Remove the APF Tray Assembly (REP 4.2) from the printer unit by pushing the feeder in, down and slightly to the left until it can be removed.

5. Remove the APF Tray Assembly out in the direction of arrow.
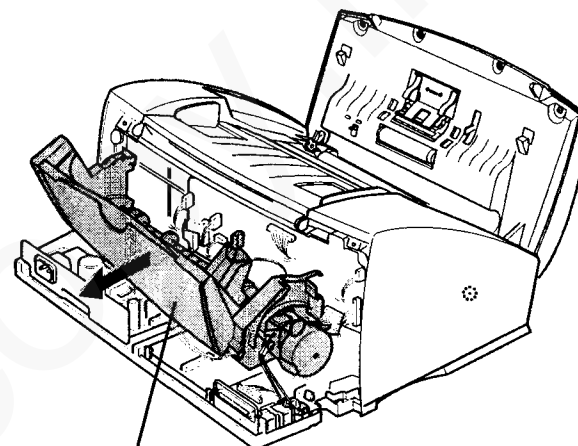
APF Tray Assembly

Replacement

1. Reinstall the components in the reverse order

REP 4.3   Maintenance Station

Parts List: 4.1

Disconnect the power cord.

⚠

Removal

1. Remove the Printer Assembly (REP 4.1 Printer Assembly).

2. Center the Carriage Assembly to the left off of the Home Assembly.

3. Release the locking tabs at both ends of the Maintenance Station on the Main PBA side of the Main Frame. Remove the Maintenance Station in the direction of the arrow.
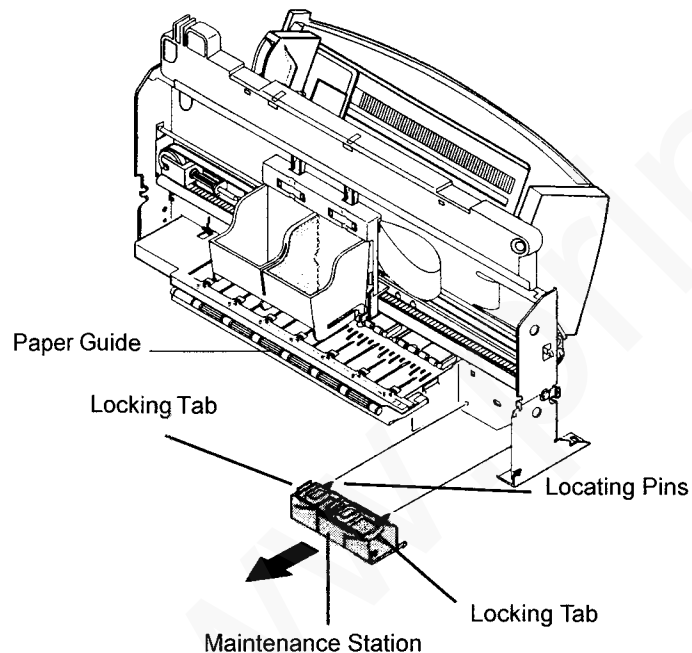
4. Gently push the locating pins to remove the Maintenance Station. Hold the seals and tabs to the right so they will not hit the Paper Guide during removal.

Replacement

Note: When inserting Maintenance Station into position, be careful that the pins are pushed into the locating holes.

1. Reinstall the components in the reverse order

Paper Guide

Locking Tab

Locating Pins

Locking Tab

Maintenance Station

REP 4.4   Carriage Assembly

Parts List: 4.1

Disconnect the power cord.

⚠

Removal

1. Remove the Printer Assembly (REP 4.1 Printer Assembly).

2. Center the Carriage Assembly.

3. Disconnect JP1, JP2, and JP3 from the Main PBA.

4. Remove the Springs located at both ends of the Carriage Shaft.

5. Remove the Carriage Shaft.

6. Remove the screw on the left side of the Carriage Motor. Then loosen the screw on the right side of the Carriage Motor so that the Carriage Drive Belt can be removed from the Carriage Motor and Pulley.

7. Gently lift up to release the tabs on top of the Carriage from the top of the Main Frame and the Encoder Sensor form the Encoder

8. Remove the Carriage Assembly from the Main Frame.

9. Make a note of how and where the Carriage Assembly is connected to the Carriage Drive Belt for future reference when replacing the Carriage Assembly.
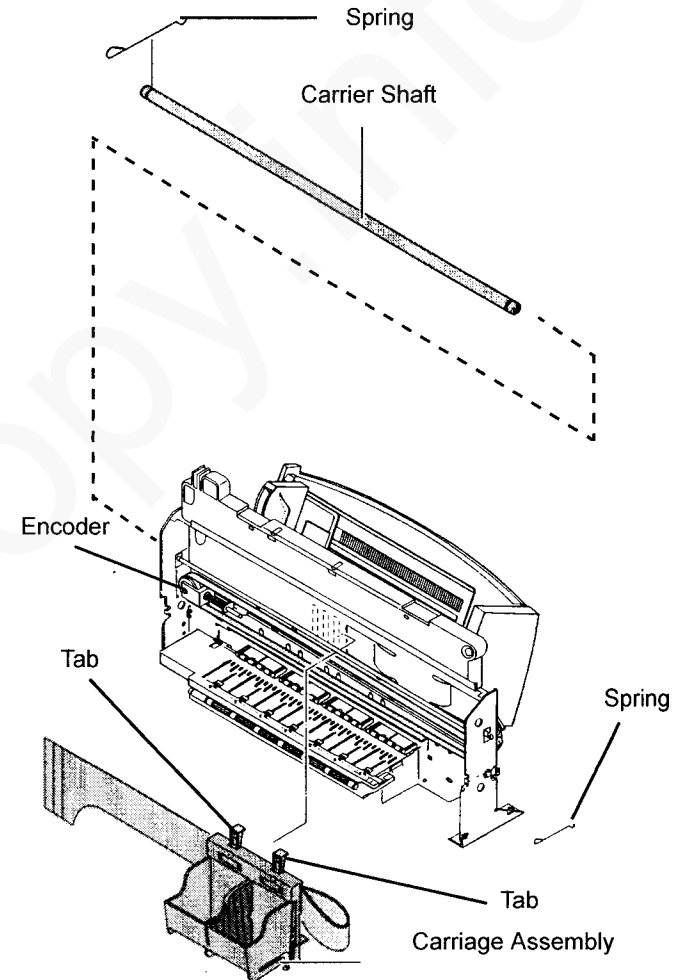
Replacement

1. Reinstall the components in the reverse order

2. When completed, loosen the screw holding the Carriage Idler Pulley Holder to allow the spring to tighten the belt properly.
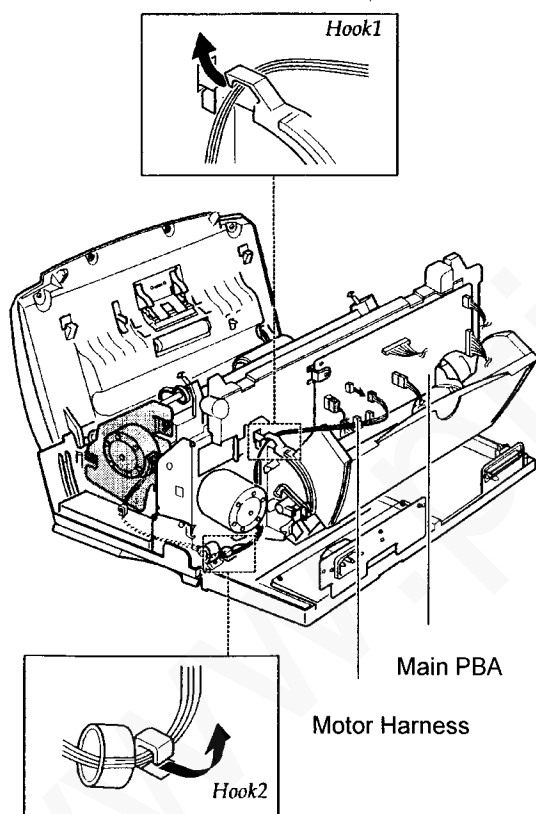
REP 4.5   Main PBA
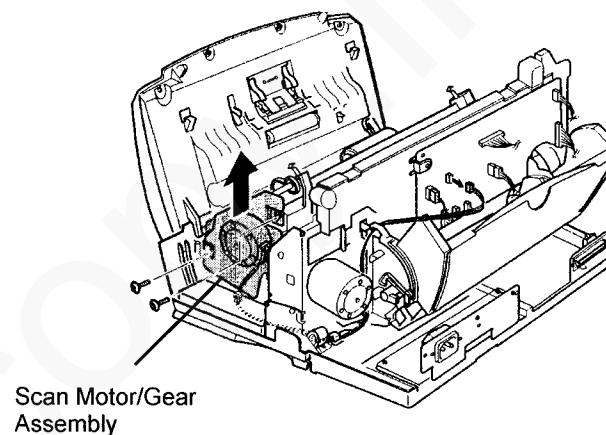
Parts List: 4.1

Disconnect the power cord.

⚡

Removal

1.   Remove the Top Cover Assembly (REP 1.3 Top Cover Assembly).

2.   Disconnect all connectors from the Main PBA.

3.   Remove one screw securing the Main PBA at the right edge of the PBA (when viewed from the rear).

4.   Pull the sensor lever towards the rear, then remove the Main PBA by lifting the top right corner
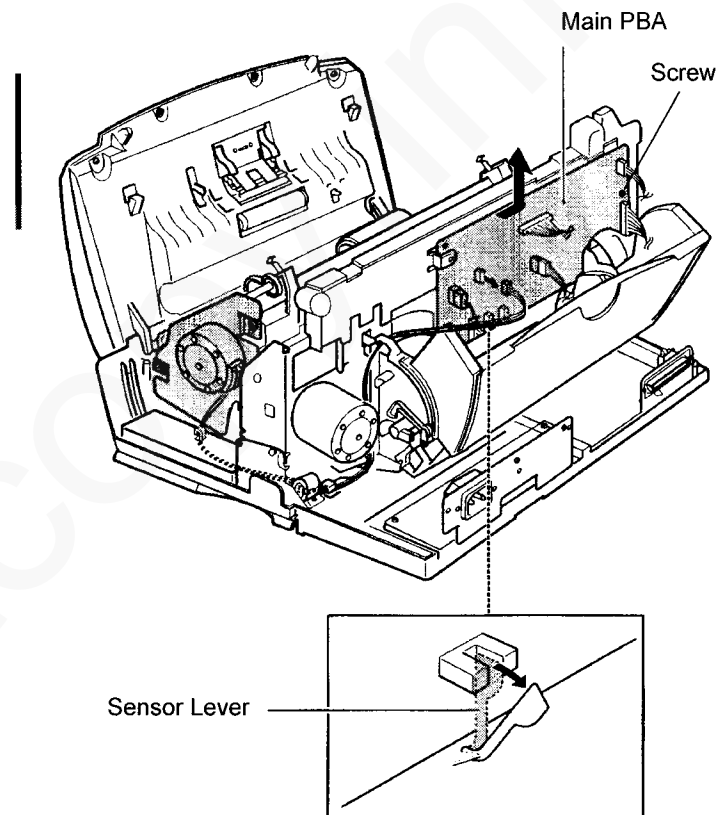
Main PBA

Screw

Sensor Lever

Replacement

1.   Reinstall the components in the reverse order

2.   Perform Adj. 3.1 Adjust CIS Shading.

REP 4.6 Paper Guide Assembly

Parts List: 4.1

Disconnect the power cord.

⚠

Removal

1. Remove the following:

   a. Roller Holder Assembly (REP 4.7 Roller Holder Assembly).

   b. Carriage Assembly (REP 4.4 Carriage Assembly).

   c. Maintenance Station (REP 4.3 Maintenance Station)

2. Remove the two screws securing the Exit Roller Assembly to the Paper Guide.

3. Remove the Exit Roller by gently pulling on the right end to free the roller.

4. Remove the Exit Roller from the Drive Belt.

5. Gently remove the right side of the Paper Guide from the Main Frame while removing it from the Feed Roller

6. Remove the left side of the Paper Guide from the Main Frame while removing it from the Feed Roller in the direction shown below.

Exit Roller Assembly   Paper Guide
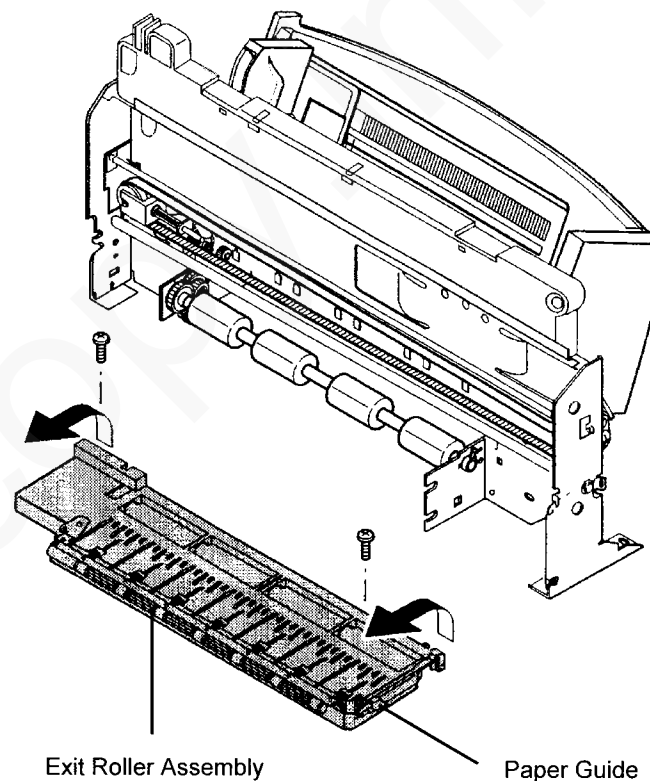
Replacement

1. Remove the Exit Roller Gear at the left end of the Exit Roller for easier replacement. The gear end is inserted into the roller.

2. Reinstall the components in the reverse order

REP 4.7   Roller Holder Assembly

Parts List: 4.1

Disconnect the power cord.

⚠️

Removal

1. Remove the following:

    a. Top Cover Assembly (REP 1.3 Top Cover Assembly)

    b. Printer Assembly (REP 4.1 Printer Assembly).

    c. APF Tray Assembly (REP 4.2 APF Tray Assembly).

    d. Main PBA (REP 4.5 Main PBA).

2. Disconnect four Friction Springs from four Friction Holders to the Roller Holder.

3. Depress the two latching tabs on the Roller Holder on the front side of the Main Frame. Slide the Roller Holder down as shown to remove.

Replacement

1. Reinstall the components in the reverse order

Latching Tab. Press from front of Main Frame to

Friction Spring. Release at this

Latching Tab Slots. Press Tabs from front of Main Frame to release.

Center

Paper Path

Latching
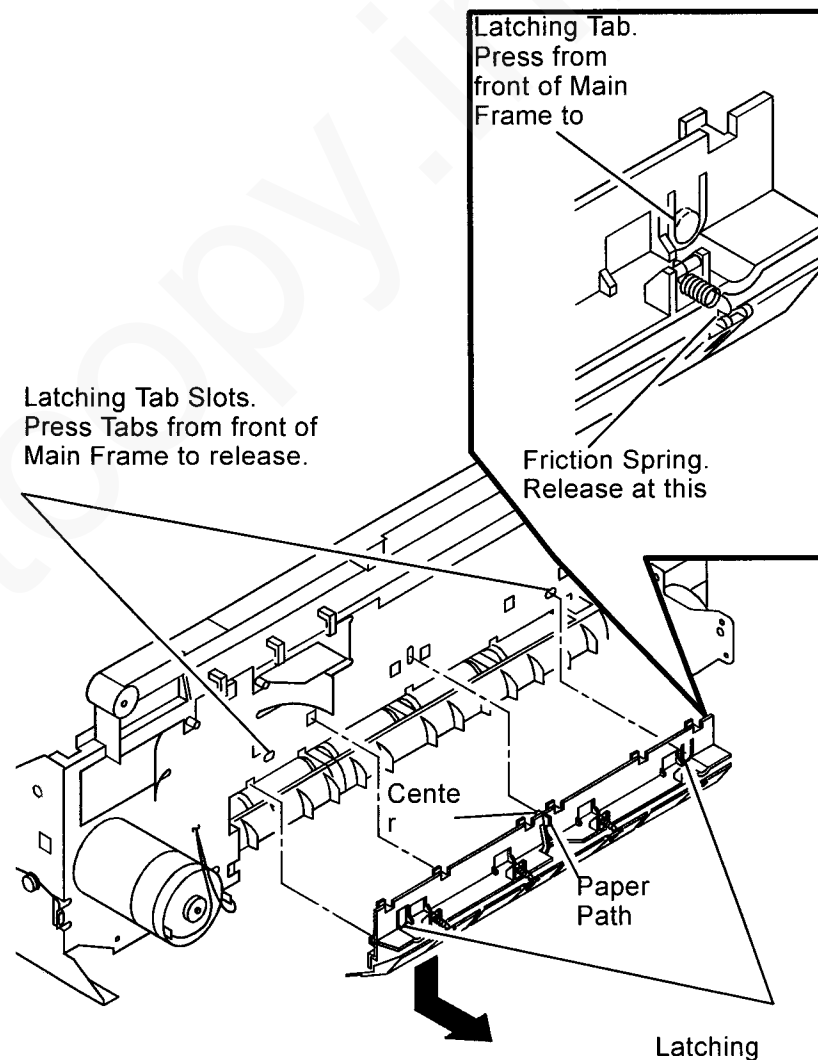
REP 4.8   Feed Roller

Parts List: 4.1

Disconnect the power cord.

⚠️

Removal

1. Remove the Paper Guide Assembly (REP 4.6 Paper Guide Assembly).

2. Remove the Right Feed Bearing as shown below.
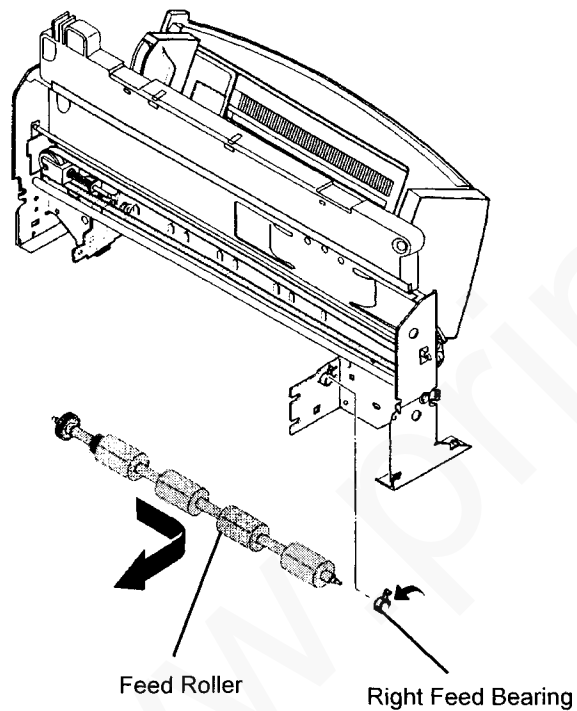
3. Pull the Feed Roller in the direction of the arrow and take it out.

Replacement

1. Reinstall the components in the reverse order

Feed Roller   Right Feed Bearing

REP 4.9   Paper Feed Motor Assembly

Parts List: 4.1

Disconnect the power cord.

Paper Feed Motor Assembly

Removal

1. Remove the Feed Roller (REP 4.8 Feed Roller).

2. Remove the two screws and take out the Paper Feed Motor Assembly.
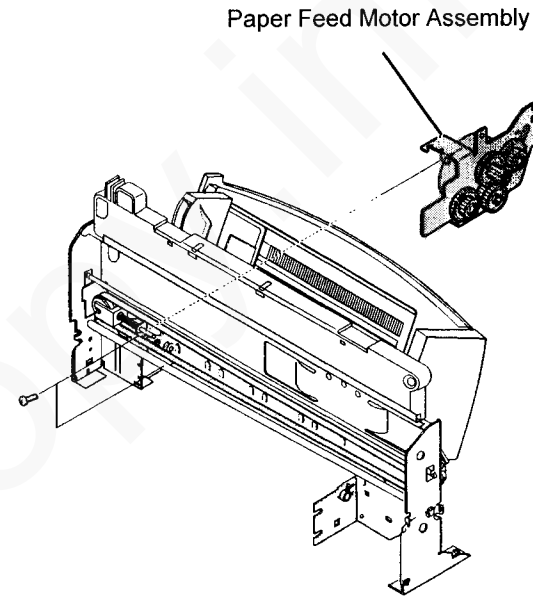
Replacement

1. Reinstall the components in reverse order

ADJ 3.1   Adjust CIS Shading

This procedure is used to adjust the amount of light for the CIS.

WARNING
CIS Shading MUST be performed after downloading a new
firmware version. If not, the system will not work properly.

Note: Clean the CIS, Platen Glass and White Roller before performing
this adjustment.

ADJUST SEQUENCES

1. Load an all white document in scanner Unit.

2. Press ▤ , #, 1, 9, 3, 4.

3. Press ▤ , 04 (SYSTEM SETUP), ∨ , ∨ .

4. LCD will display "CIS SHADING?".

5. Press ◇ then LCD will display "SHADING...".

6. After scanning, a shading waveform will be printed out.

7. Press ▽ .

8. Turn OFF system, then Turn IT ON to complete setting.

ADJ 4.1   Adjust Cartridge Alignment

This procedure is used to arrange the alignment of the Black, Color and Photo Cartridge. When a color and a black cartridge is installed you get four settings, A, B, C, & D. When you have a color and a photo cartridge installed you get only adjustment A & B for the new cartridge.

ADJUST SEQUENCES

1. Press ▤ , 013 (Maintenance), ∨ .

2. LCD will display "ARRANGE ALIGNMENT ?".

3. Press ◇ then LCD will display "PRINTING...".

4. After printing the "CARTRIDGE ALIGNMENT" selection sheet, select the number in each section that represents the proper alignment such as; for "ALIGNMENT A" number 5 is the best setting for the vertical line and "ALIGNMENT B" number 7 is the best setting for the horizontal line.

5. Enter the number of your selection when it is requested on the machine display, then press ◇ to go to the next selection.

6. When all selections have been made the machine returns to standby.

Section Contents

Introduction

Overview

The Parts Lists section prov ides exploded view illustrations of a ll spared subsystem components and a listing of the corresponding part num bers. The illustrations s h o w the relationships between parts.

Organization of this Section

The following elements ma ke up the Parts List section:

Parts Lists (PL)

Each item number in the part numbers listing correspondsd an item number in t h e illustration. All the parts in a given subsystem of the machine will be located in the same illustration or in a series of associated illustrations. The pa rts which are not spared are indicated by "- -" in the Part column.

Exploded View Illustrations

An item that is called out on an illustration has a corresponding listing withi nhtis section.

Components are given item numbers that correspond to the part number listings.

Part Number Index

This inde x l ists all t h e s p a r e d parts in the system in numerical order. Each number is followed by a reference to the parts lis t o n which the part may be found.

PL 1.1 Main Assembly

20{2&3
19{A&D

10

9

D

D

D

D

1

2

3

20

4 (470 only)

A

4 (480 only)

D

D

5

8

D

7

6

18

21
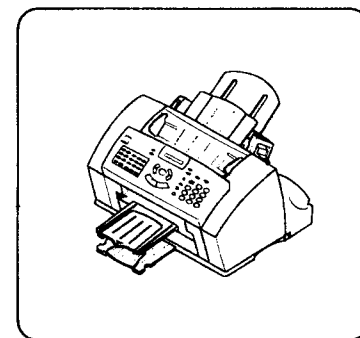
PL 1.1 Main Assembly

Item	Part	Description
1.	- -	Control Panel Assembly (See PL 2.1) (REF only)
2.	- -	Document Input Tray Base
3.	- -	Document Input Tray Extension
4.	060K01530	Cartridge Storage Assembly (480 only)
	002N01646	Cartridge Storage Cover (470 only)
5.	002N01622	Rear Cover
6.	- -	Base Assembly (See PL 3.1) (REF only)
7.	050N00281	Document Exit Tray Extension (480)
	050N00290	Document Exit Tray Extension (470)
8.	- -	Engine Assembly (See PL 4.1) (REF only)
9.	002N01623	Top Cover Assembly (US/XE)
	002N01627	Top Cover Assembly (ACO)
10.	022K64470	White Roller Assembly
11.	110K10140	Handset (ACO only) (Not shown)
12.	117K32600	Handset Cord (ACO only) (Not shown)
13.	117K13660	Power Cord (Not show
14.	140N05292	Hook PBA (ACO) (Not shown)
15.	152N01682	Hook, Harness (ACO) (Not shown)
16.	162K06530	RTI Cable (Not shown)
17.	162K39580	Printer Cable (Not shown)
18.	050N00297	Document Exit Tray Base (480)
	050N00291	Document Exit Tray Base (470)
19.	600N01590	Hardware Kit
20.	050N00280	Document Input Tray Assembl
21.	050N00279	Printer Exit Tray Assembl

PL 2.1 Control Panel Assembly

3{1,8,A&D
4{5,6,7,D
10{A&D
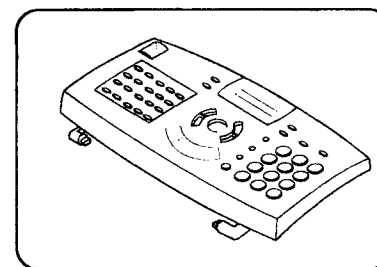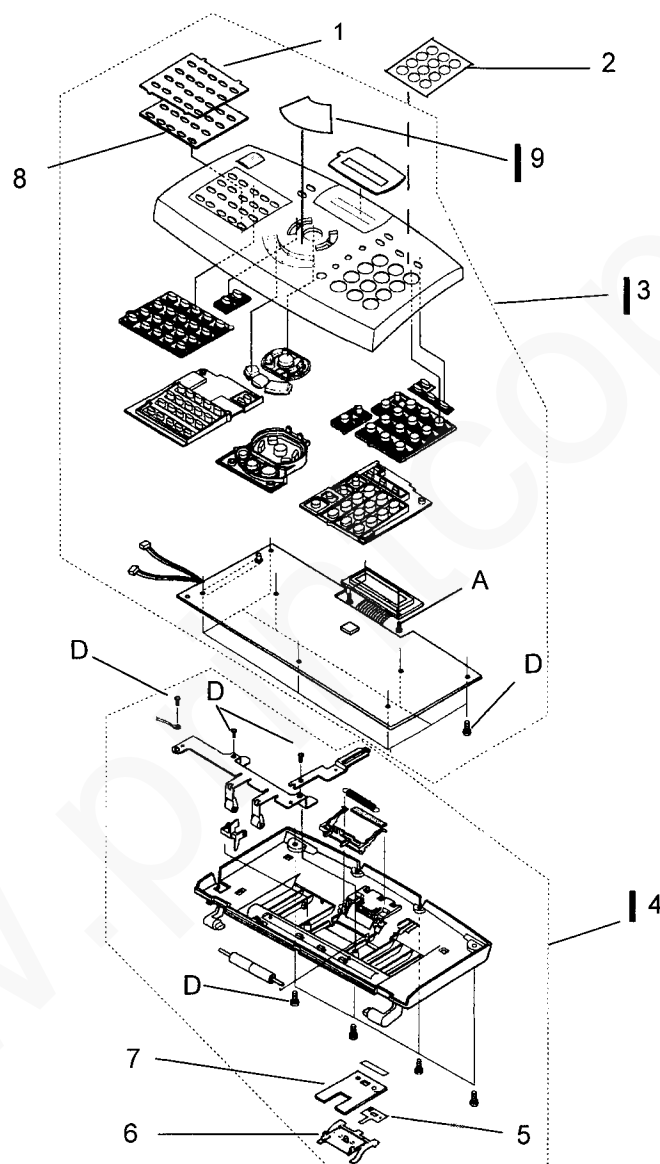
PL 2.1 Control Panel Assembly

Item	Part	Description
1.	802E17830	One-Touch Cover
2.	092P42302	Control Panel Overlay, (Dutch)
	092P42309	Control Panel Overlay, (French)
	092P42300	Control Panel Overlay, (German)
	092P42303	Control Panel Overlay, (Italian)
	092P42312	Control Panel Overlay, (Portuguese)
	092P42313	Control Panel Overlay, (Spanish)
3.	101N01177	Control Panel Assembly (480 only) (See Note)
	101N01184	Control Panel Assembly (470 only) (See Note)
4.	101N01178	Upper Scanner Assembly
5.	- -	ADF Sheet (REF only)
6.	019E43540	ADF Rubber Holder
7.	019E43530	ADF Rubber
8.	891E99030	One-Touch Label, (Dutch)
	891E88990	One-Touch Label, (English)
	891E99060	One-Touch Label, (French)
	891E99010	One-Touch Label, (German)
	891E99040	One-Touch Label, (Italian)
	891E99080	One-Touch Label, (Portuguese)
	891E99070	One-Touch Label, (Spanish)
9.	892E14630	Menu Overlay, (Dutch)
	892E14250	Menu Overlay, (French)
	892E14620	Menu Overlay, (German)
	892E14640	Menu Overlay, (Italian)
	892E14610	Menu Overlay, (Portuguese)
	892E14600	Menu Overlay, (Spanish)
10.	600N01590	Hardware Kit

Note: When ordering item 3, also order items 2, 8, and 9 with the proper languages.

PL 3.1 Base Assembly

7{3,8,13
24{B&D
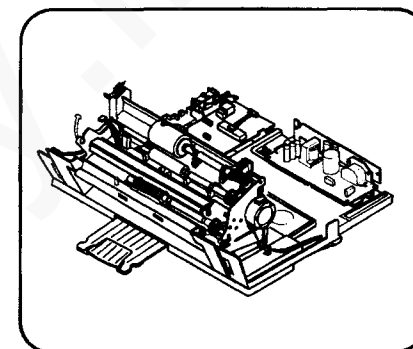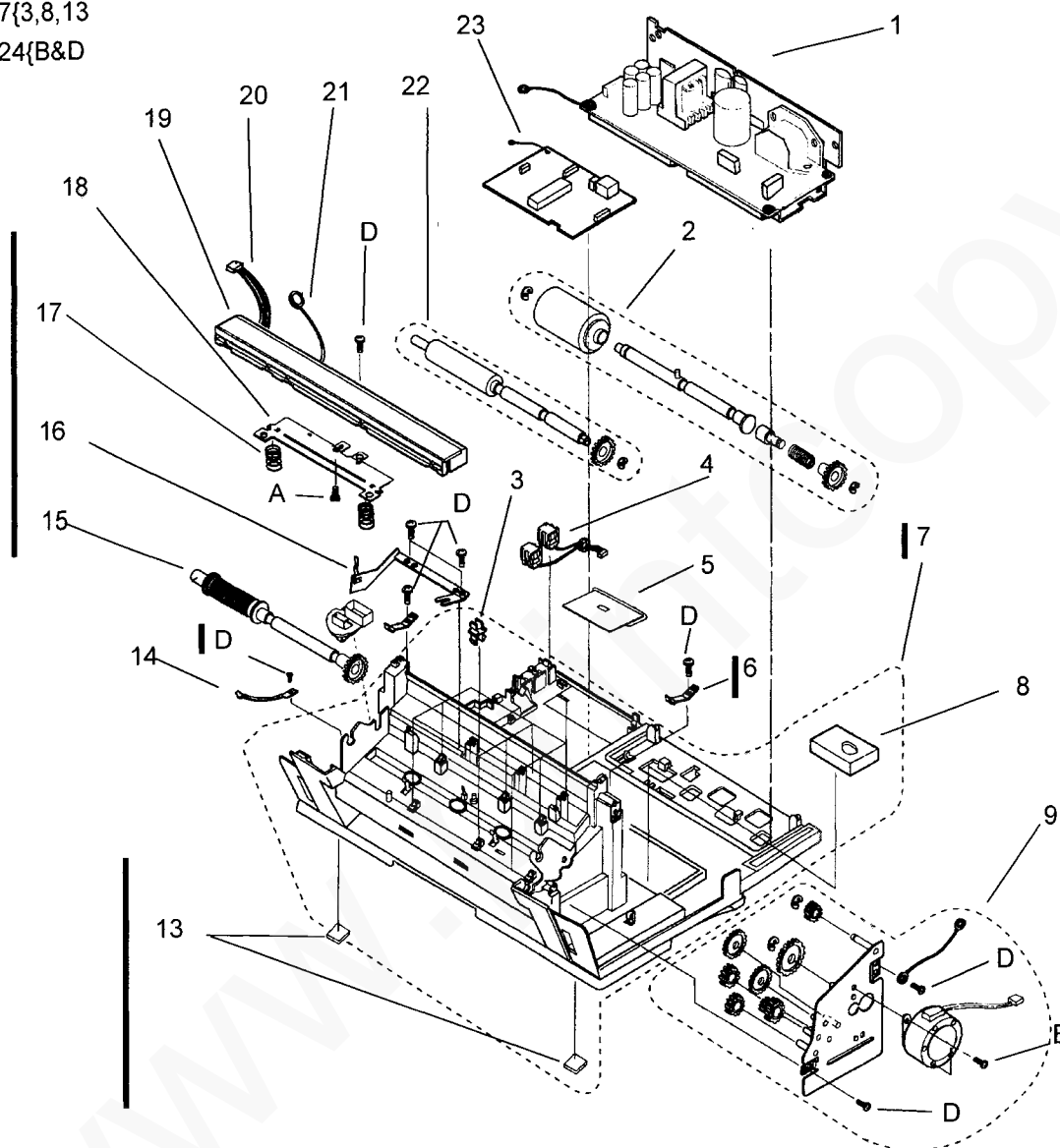
PL 3.1 Base Assembly

Item	Part	Description
1.	105N01268	Power Supply Assembly (110V - 220V)
2.	022K64490	ADF Roller Assembl
3.	013N00392	Bushing
4.	152N01671	LIU Harness (XE)
	152N01672	LIU Harness (USO/XCL/ACO)
5.	140N05254	Parallel Interface PBA
6.	030N00434	ADF Spring Clips
7.	002N01624	Base Cover Assembl
8.	019N00435	Felt Pad
9.	127K30440	Scan Motor/Gear Assembl
10.	- -	Deleted
11.	- -	Deleted
12.	- -	Deleted
13.	017N00167	Rubber Foot
14.	830E28530	ADF Restraint
15.	006E67100	Document Exit Shaft Assembly
16.	809E23900	Ground Spring Plate
17.	809E23890	CIS Spring
18.	830E40000	CIS Bracket
19.	109K01250	CIS
20.	152N01670	CIS Harness
21.	162K51140	CIS Harness GND
22.	022K64480	Scan Drive Roller Assembly
23.	140N05313	LIU PBA (USO/XCL) (470)
	140N05328	LIU PBA (XE) (470)
	140N05403	LIU PBA (ACO) (470)
	160K64040	LIU PBA (USO/XCL) (480)
	160K64850	LIU PBA (XE) (480)
	160K64860	LIU PBA (ACO) (480)
24.	600N01590	Hardware Kit

1{17

16{A,B,C&D

10 11 12 B D 13 14 15 1 17

9 D

8 C 2

7 C 3

4

6 5

APF Sensor (480 only)

A

B

B

A

D

PL 4.1 Engine & APF Assembly

Item	Part	Description
1.	022N01026	APF Tray Assembly (480, Alternate to 470)
	022N01042	APF Tray Assembly (470 only)
2.	127N01011	Carriage Motor Assembly
3.	001N00298	Main Frame Assembl
4.	013E14870	Right Feed Bearing
5.	094N00210	Maintenance Station
6.	022N01027	Feed Roller
7.	001N00297	Paper Guide
8.	041N00198	Carriage Assembly
9.	006E66200	Carriage Shaft
10.	009N01070	Carriage Shaft Spring
11.	146N00095	Encoder
12.	020N00470	Idler Pulley Assembly
13.	030N00433	Paper Feed Motor Assembl
14.	140N05255	Main PBA (480 only)
	140N05312	Main PBA (470 only)
15.	022N01028	Roller Holder Assembly
16.	600N01590	Hardware Kit
17.	050N00282	Guide Extension

Part NO. Index

Part Number	PL	Part Number	PL	Part Number	PL
001N00297	4.1	092P42303	2.1	802E17830	2.1
001N00298	4.1	092P42309	2.1	809E23890	3.1
002N01622	1.1	092P42312	2.1	809E23900	3.1
002N01623	1.1	092P42313	2.1	830E28530	3.1
002N01624	3.1	094N00210	4.1	830E40000	3.1
002N01627	1.1	101N01177	2.1	891E88990	2.1
002N01646	1.1	101N01178	2.1	891E99010	2.1
006E66200	4.1	101N01184	2.1	891E99030	2.1
006E67100	3.1	105N01268	3.1	891E99040	2.1
009N01070	4.1	109K01250	3.1	891E99060	2.1
013E14870	4.1	110K10140	1.1	891E99070	2.1
013N00392	3.1	117K13660	1.1	891E99080	2.1
017N00167	3.1	117K32600	1.1	892E14250	2.1
019E43530	2.1	127K30440	3.1	892E14600	2.1
019E43540	2.1	127N01011	4.1	892E14610	2.1
019N00435	3.1	140N05254	3.1	892E14620	2.1
020N00470	4.1	140N05255	4.1	892E14630	2.1
022K64470	1.1	140N05292	1.1	892E14640	2.1
022K64480	3.1	140N05312	4.1		
022K64490	3.1	140N05313	3.1		
022N01026	4.1	140N05328	3.1		
022N01027	4.1	140N05403	3.1		
022N01028	4.1	146N00095	4.1		
022N01042	4.1	152N01670	3.1		
030N00433	4.1	152N01671	3.1		
030N00434	3.1	152N01672	3.1		
041N00198	4.1	152N01682	1.1		
050N00279	1.1	160K64040	3.1		
050N00280	1.1	160K64850	3.1		
050N00281	1.1	160K64860	3.1		
050N00282	4.1	162K06530	1.1		
050N00290	1.1	162K39580	1.1		
050N00291	1.1	162K51140	3.1		
050N00297	1.1	600N01590	1.1		
060K01530	1.1	600N01590	2.1		
092P42300	2.1	600N01590	3.1		
092P42302	2.1	600N01590	4.1		

Common Hardware Kit

Description	Qty.
A. Tapping Screw 2.5 x 6	10
B. Tapping Screw 3 x 5	10
C. Tapping Screw 3 x 6	10
D. Tapping Screw 3 x 8	10
E. Tapping Screw 3 x 10	10

Section Contents

Introduction

This section includes the precautions and machine specifications. Also included is a list of abbreviations used throughout the manual.

Precautions

Follow these safety, ESD, and servicing precautions to prevent personal injury and equipment damage.

1. Be sure that all built-in protective devices are in place. Restore any missing protective shields.

2. Make sure there are no cabinet openings through which people- particularly children- might insert fingers or objects and contact dangerous voltages.

3. When re-installing chassis and assemblies, be sure to restore all protective devices, including control knobs and compartment covers.

4. Design Alteration Warning:
Never alter or add to the mechanical or electrical design of this equipment, such as auxiliary connectors, etc. Such alterations and modifications will void the manufacturer's warranty.

5. Components, parts, and wiring that appear to have overheated or are otherwise damaged should be replaced with parts which meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.

6. Observe the original lead dress, especially near sharp edges, AC, and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board.

7. Product Safety Notice:
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they provide could be lost if a replacement component differs from the original. This holds true, even though the replacement may be rated for higher voltage, wattage, etc.

Components critical for safety are indicated in the parts list. Use only replacement components that have the same ratings, especially for flame resistance and dielectric specifications. A replacement part that does not have the same safety characteristics as the original may create shock, fire, or other safety hazards.

ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called "Electrostatically Sensitive (ES) Devices", or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor "chip" components.

The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

CAUTION:
Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1. Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, which should be removed for your personal safety reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.

3. Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.

4. Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.

5. Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

6. Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.

7. Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting ones foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

Product Codes

Country	480 Code	470 Code
USO/XCL	KU3	MC7
XBRA/XLA	KU4	MC8
XE	KU5	MC9

Using the Control Panel

Shown below are the controls used to operate the printer. All the controls are located on the front Control Panel.

(480) Express
Use to quickly scan documents into memory when fax

(470) Cartridge
Use to center the carriage to change the cartridge.

Form Feed
Use to eject paper from the printer if the paper is not automatically fed out from the printer after printing. Also, use to load paper if the machine runs out of paper during a PC print job.

LCD Display
The display shows the current status of your machine, and guides you through various tasks using a menu system for each operation.

Search/Delete
Use to search for numbers in memory. Also use to delete digits in the edit mode.

Receive (*Receive Mode*)
Use to choose the receive mode you want to use. The selected mode is displayed.

Resolution
Use to choose the resolution of copied or transmitted documents.

Contrast
Use to choose the contrast of copied or transmitted documents.

Number Keypad
Use to dial numbers manually or to enter letters and numbers for various programming functions.

One-touch Dial and Special Function Buttons
Use to call most frequently used numbers with one button. Also, use in conjunction with the Menu button to set up special functions or print reports.

Menu
Use to choose special functions.

Up and Down Buttons ∧ ∨
Use to display the next or previous menu item. Also used to make adjustments.

Right and Left > <
Use to move cursor left or right across the display.

Stop
Use to stop an operation at any time.

Copy
Use to copy a document.

Start/Enter
Use to start a job. Also use to activate the selection shown in the display.

Speed/Dual
Use to dial calls and send fax documents by entering a 2-digit number. Also use to switch the LCD display while performing dual jobs.

Redial/Pause
Use to redial the last phone number called. You can also use it to add a pause when storing a number in memory.

Flash
Use to perform a switch-hook operation such as call waiting.

Speaker
Use to adjust the volume of the internal speaker.

WorkCentre 480/470cx Differences

The WorkCentre 480cx and WorkCentre 470cx are basically the same machine. There are a few hardware and firmware differences between the two machines which will be call out here and in the "Using the Control Panel" section on the previous page.

To understand the differences it is recommended that you review:

- Using the Control Panel
- Accessories/Supplies/Consumables
- Specifications
- Service Mode
  - Maintenance
- Setting Up the System
  - System Setup Options
- System Data
  - Selectable System Data

Summary of 480cx to 470cx Differences

Description	480cx	470cx
Print speed (mono)	8PPM	6PPM
Image Memory	2.5 Meg	0.5meg
Battery Backup	1 Hour	15 Minutes
Quick-Scan speed	3 Seconds	6 Seconds
PC Fax	Supported	Not Supported
LaserFax Lite	Provided	Not Provided
MGI Photo Suite	Provided	Not Provided
APF Paper Empty Sensor	Provided	Not Provided
ADF Door Interlock	Provided	Not Provided
Ink Cartridge Storage	Provided	Not Provided

- Express Button changed to Cartridge Center Button on the Control Panel.
- Initial supply of the Black Ink Cartridge is standard capacity.
- Some cosmetic (color) changes to trays and guides.

Accessories/Supplies/Consumables

Bundle S/W	USO/XCL English/French	XBRA/XLA Portuguese/Spanish	XE

2 CD Roms:
 #1 - Pagis Pro 2.0, LaserFax (480 only),
    Adobe Acrobat Reader,Printer, Scanner
    and Fax Drivers, Online User Guide
 #2 - Software MGI PhotoSuite (480 only)
	300N01777 (480)
	300N01847 (470)
	
	300N01734 (480)
		300N01739 (480)
		300N01848 (470)
		
		300N01734 (480)
			300N01739 (480)
			300N01848 (470)
			
			300N01734 (480)

Accessories			
Parallel Cable	162K39580	162K39580	162K39580
Supplies			
Ink Cartridge	Black - 8R7881 Color - 8R7880 Photo - 8R7883	Black - 8R7881 Color - 8R7880 Photo - 8R7883	Black - 8R7881 Color - 8R7880 Photo - 8R7883
Lint Free Tissue	35P2163	035P02163	600S04372
Lubricant	70H44	70H44	TBD
CLEAN-UPS	43P67	43P67	43P67
Film Remover	43P45	43P45	8R90020
Lens Cleaner	43H12	43H12	600T90318
Paper Towels	35P3191	35P3191	8R90019
Test Pattern	82P151	82P151	82P151

Specifications

Table 6-1. Printer Engine

Technolog		Thermal Inkjet 2-pen & Print Head Swapping Type
Speed	Color (*1) Mono (*2)	3ppm at Draft Mode 8ppm at Draft Mode (480 only) 6ppm at Draft Mode (470 only)
Resolution	Color	600 x 600 dpi (1200 x 1200 dpi Addressable)
	Mono	600 x 600 dpi (1200 x 1200 dpi Addressable)
Printing Width		203mm
Feeding Method	Automatic Manual	100 Sheets of 20lb cut sheets Yes
Emulation		Host Based Printing (GDI)
Printer Driver		Windows 3.1/3.11, Windows 95/98 driver, Windows NT4.0
Interface		IEEE 1284 Compatible Parallel Interface (ECP)

(*1) The average print time with 15%/A4 test image.
(*2) The average print time with 4%/A4 test image.

Table 6-2. Head

	Mono (Black)	Color
Print Head	208 nozzles	192 nozzles
Ink type	Pigment	Dye
Ink Yield	about 1075 sheets at 5% image coverage	about 240 sheets at 15% image coverage

Table 6-3. Power & Size

Power	90 to 265 Volts AC 50/60 HZ Standby: 30 Watts Minimum Operating: 300 Watts Maximum
Dimensions (W x D x H)	438mm x 360mm x 192mm (Without Handset) 17.2" x 14.2" x 7.6" (Without Handset)
Weight	6.3Kg (14lb) Unpackaged 10.5Kg (23lb) Packaged
Operating Environment	Temperature: 10 to 32.5C (50 to 104 F) degrees Relative Humidity: 20 to 80% Altitude: up to 2500 meters (8,250 feet)
EME	FCC Part 15 Class B EN 60950 EN 55022 EN 50082

Table 6-4. Scanner

Compatibility	TWAIN
Technology	CIS
Light Source for Color CIS	RGB LEDs (Line Order Control)

Table 6-5. Facsimile

General	Compatibility	ITU-G3
	Scan method	CIS
	Scan width	Max. 216mm, Effective: 210mm
	Scan Resolution	300 x 300 dpi
	Scan Speed	3 sec
	Feeding method	Sheet
	ADF	30 sheets of 20lbs
	Document Trays	Input and Exit
	Paper Tra	APF (With Manual Tray)
	Modem Speed	14.4 Kbps
	Coding Method	MH, MR, MMR, Error Correction Mode
	LCD	2 Lines Each of 16 Characters
Scanning	Resolution	Standard: 200 x 100 dpi
		Fine: 200 x 200 dpi (Default)
		Superfine: 300 x 300 dpi
	Gray Scale & Contrast	Darken
		Lighten
		Photo: Error diffusion

Table 6-5. Facsimile - continued

Memory	Capacity	2.5 Mbyte (480 only) 0.5 Mbyte (470 only)
	Back-up Time	30 Minutes (Continuous Power Failure) (3 Volt Lithium)
	Confidential	No
	Delayed	Up to 10 Locations
	Group Dial	20 Number Programmable
	Forced Memory Tx.	Yes
	Priority Tx.	Yes
	Memory	Automatic reception when paper empty.
	Confidential	No
Telephone	One-touch Dial	20 Locations
	Speed Dial	50 Locations
	Chain Dial	Yes
	Handset & Cradle	South America Onl
	On-hook Dial	Yes, 1-Ke
	Last Number Redial	Yes, 1-Ke
	Auto Busy Redial	Yes
	No Power Opera-tion	UK : CALLING only, Other Country : No
	Hold & Mute	No
	Pause	Yes, Use Redial Key
	Ringer Volume	S/W Option Setting (4Steps)
	Tone/pulse Select	S/W Option setting
	Flash	Yes
	DRPD	US : Yes, Other Country : No

Table 6-5. Facsimile - continued

Reports & List	TX/RX Journal	Yes
	Image TCR	Yes, Reduction of First Page Sent by Memory Tx
	Delayed Dial List	Yes
	System Data	Yes
	Tel Number List	Yes
	Help List	Yes
Copy	Multi-page Copy	Up to 99 Pages
	Gray Scale	256 Levels
	Reduction & Enlargement	25%~200% (Reference is the top center of Document)
Tel I/F	Answering I/F	Yes
	Ext. Phone	1-jack, Extension Phone Transfer
Others	Polling	Yes
	Sensors	No Paper (480 only), Paper Jam, Scan Position
	Error Indicator	1-LED, 2-LCD Display
	Real Time Clock	Yes
	RTI	Yes

| XE LIU PBA Country Configurations

Jumper Settings

See LIU component layout for jumper positions and pin callouts.

Country	P2 (DP Ratio)	P4 (DCR)	P5 (Impedance)
Austria Denmark Finland France Germany Greece Italy Netherlands Norway Sweden Switzerland	40 to DP	CTR21 to DCR	CTR21 to IMP
Belgium Portugal Spain U.K.	33 to DP	CTR21 to DCR	CTR21 to IMP
Bulgaria Czech Romania Russia Turkey Ukraine Yugoslavia	40 to DP	DCR to OTHER	No Setting
Hungary Poland	33 to DP	DCR to OTHER	No Setting

List Abbreviations

Acronym	Definition
MFP	Multi Function Peripheral
I/F	Interface
UART	Universal Asynchronous Receiver/Transmitter
ECP	Extended Capabilities Port
CR	Carriage Return
LF	Line Feed
SCANIP	SCAN Image Processor
CIS	Contact Image Sensor
A/D	Analog To Digital
D/A	Digital To Analog
LIU	Line Interface Unit
TIT	Transformer Input From Transformer
ROT	Receive Output Transformer
LI	Line Input

Service Mode

6-1-1-1 HOW TO ENTER SERVICE MODE

In service mode (tech) mode, the technician can check the machine and perform various test to isolate the cause of a malfunction.

To enter the service mode press ▤ , #, 1, 9, 3, 4 in sequence. The LCD displays "T", indicating the machine has entered service (tech) mode. While in service mode, the machine still performs all normal operations. To return to normal user mode, press ▤, #, 1, 9, 3, 4 in sequence again.

Options changed while in service mode do not remain changed unless you clear the machines memory.

Maintenance

To enter Service Mode press ▤, #, 1, 9, 3, 4 before pressing ▤ and one-touch button 13, Maintenance. Press ∧ or ∨ repeatedly to select the desired option.

When the desired option appears, enter the corresponding information to change the status of the selected function. Press ⬭ to return to the standby display.

| User Mode	Test
SELF TEST	Performs a print out demonstrating print quality. Date on printout is F/W version date.
ARRANGE ALIGNMENT	Allows alignment of the partridge printing Heads.
CLEAN HEAD	Cleans the head to improve quality.
ADJUST SHADING	Adjusts CIS white reference point.
Service Mode	Report
SYSTEM DATA REPORT	System Data settings are reported.
SCHEDULE JOB REPORT	Jobs scheduled are listed.
PHONE BOOK REPORT	Telephone listing of numbers in memory.
MESSAGE CONFIRMIRMATION REPORT	Report showing confirmation of last message sent.
TRANSMISSION REPORT	Transmission Journal listing of jobs sent.
RECEPTION REPORT	Reception Journal listing of jobs received.
PROTOCOL REPORT	Listing of the signals sent and received during the last facsimile operation.

HELP LIST REPORT	Provides a menu listing of all items that can be accessed and the button to press for their access.
SELF TEST REPORT	Self Test print out showing quality of print.
CIS SHADING PATTERN	Print out showing the last test after accomplishing a Shading adjustment.
ASF TEST	Provides continuous feeding of paper from the ASF with each page numbered at the top right corner until ⬭ is pressed.
NVRAM DUMP REPORT	Gives dot count varibles for cartridges installed.

Setting Up the System

Changing System Setup

To enter Service Mode press ▤, #, 1, 9, 3, 4 before pressing ▤ and one-touch button 04, System Setup. Press ∧ or ∨ repeatedly to select the desired option.

When the desired option appears, enter the corresponding information to change the status of the selected function. Press Ⓐ to return to the standby display.

System Setup Options

User Mode	Item	Default Status
RINGER VOLUME	[OFF/LOW/MEDIUM/HIGH]	HIGH
DEFAULT SETTING > RESOLUTION	[STANDARD/FINE/FINE PHOTO/ SUPER FINE/S. FINE PHOTO]	FINE
> CONTRAST	[NORMAL/DARKEN/LIGHTEN/ PHOTO]	NORMAL
SOUND CONTROL > ALARM	[1] ON [2] OFF	ON
> KEY	[1] ON [2] OFF	ON
SELECT LANGUAGE	LANGUAGE OPTIONS DEPENDS ON MACHINE CONFIGURATION	

Service Mode	Item	Default Status
MODEM TEST	FSK/2400/4800/7200/ 9600/12000/14400 bps & 1100/1650/ 1850/2100HZ	N/A
DTMF TEST	1,2,3,4,5,6,7,8,9,0,*,#	N/A
CIS SHADING	Adjusts white reference level. Shading adjustment is performed and a COLOR CIS AUTO PEAK TEST printout occurs.	N/A
RINGER VOLUME	[LOW/MEDIUM/HIGH]	HIGH

DEFAULT SETTING > RESOLUTION	[STANDARD/FINE/FINWE PHOTO/ SUPER FINE/S.FINE PHOTO]	FINE
> CONTRAST	[NORMAL/DARKEN/LIGHTEN/ PHOTO]	NORMAL
SOUND CONTROL > ALARM	[1] ON [2] OFF	ON
> KEY	[1] ON [2] OFF	ON
PROGRAM DOWNLOAD	Allows for F/W upgrades. See procedure below.	N/A
ROM TEST	Tests Read Only Memory. Provides firmware version and check sum.	N/A
AGING TEST	[1] SCANNER AGING Documents loaded in the ADF will be copied. [2] PRINTER AGING Prints 2 tests showing print quality. **OR** After Loading a white document CIS SHADING adjustment is automatically performed and a COLOR CIS AUTO PEAK TEST printout occurs. PRINTING is then displayed and a sample of solid area printing and vertical printing occurs.	N/A

MODEM TEST Procedure

The modem will send various transmit signals on the telephone line you can check the fallowing:

- FSK test
- G3 training: 14400, 12000, 9600, 7200, 4800, 2400bpi
- Tones: 1100Hz, 1650Hz, 1850Hz, 2100Hz

DTMF TEST Procedure

DTMF (Dual Tone Multiple Frequency) signal can be checked.

- 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, *, #

CIS SHADING ADJ. 3.1

- CIS Shading must be performed after performing Firmware update. If not, system may not work properly.

PROGRAM DOWNLOAD

- Used to download F/W into the machines flash ROM from your PC. You can load F/W from Windows or DOS.

1. Fwup Procedure from Windows 95/98/NT.

   a. Go to the directory containing Fwup and the new firmware with a filename similar to "wc48v110."

   b. Select Fwup for Windows 95/98 and FwupNT for Windows NT by double clicking your mouse.

   c. When the Fwup screen opens you need to select "Verify Information." This checks your machine to make sure the F/W can be upgraded.

   d. When the machine is ready for the F/W to be upgraded the grayed out selection "Upgrade Now" will turn black. Select "Upgrade Now"

   e. When the F/W is completed loading the PC screen will display "Writing Complete. Do not turn off until initialize printer!"

   f. Wait for approximately 2 minutes and press ◇ to set Date & Time.

   g. Go to step 2.

OR

1. Firmware procedure from DOS.

   a. Go to DOS mode. On some machines you may not be able to use DOS located in Windows.

   b. Select Service (Tech.) Mode by pressing ▤ , #, 1, 9, 3, 4.

   c. Select Program Download by pressing ▤ , 04, V, V, V, V, V, V, ◇ , 1. The WorkCentre display will show "Type on the PC"Copy/B Filename LPT1"

   d. On the PC in DOS mode type "Copy/B (the filename) LPT1" and press ◇ .

   e. WorkCentre will reset after completing the download of the new firmware.

   f. Go to step 2.

2. Perform CIS Shading adjustment ADJ. 3.1.

3. After loading F/W it is good to check to insure that the new F/W is listed on the System List. Press ▤ ,19 and check the bttom of the System List.

System Data

Changing System Data

In Service Mode press ▤ and one-touch button 01 system data. Then press 1 to choose "TECH" or 2 to enter "User" mode. Press ∧ or ∨ repeatedly to select the desired system data.

When the desired system data appears, enter the corresponding information to change the status of the selected function. Press STOP to return to the date and time display.

Selectable System Data

(2) User Mode	Item	Default Status
PAPER SIZE	[LETTER/A4/LEGAL]	A4
MESSAGE CONFIRMATION REPORT	[ON/OFF/ERROR]	ON-ERROR
AUTO JOURNAL	[ON/OFF]	OFF
REMOTE RCV MF CODE	[0-9]	*9*
DIAL MODE	[TONE/PLUSE]	TONE
ECM MODE	[ON/OFF]	ON
RX REDUCTION	[ON/OFF/ON-VERTICAL REDUCTION ONLY]	ON
DISCARD SIZE	[0-30]	11mm
REDIAL INTERVAL	[1-15]	3minutes
REDIALS	[0-9] or [0-2]	2
ANSWER ON RINGS	[1-7]	2
SEND FROM MEMORY	[ON/OFF]	ON
LOCAL ID.	[ON/OFF]	OFF
CONTINUOUS POLL REPORT	[ON/OFF]	OFF
FAXPRINT QUALITY	[LQ/DRAFT]	LQ
CLOCK MODE	[12/24 HOURS]	12 HOURS
DRPD MODE	[ON/OFF/SET]	OFF

(1) Service Mode	Item	Default Status
MODEM SPEED	[14400/12000/9600/7200/4800/2400]	14.4 KBPS
SET TX LEVEL	[0-15]	- 12dBm
SET RX LEVEL	[40-50]	- 43dBm
FLASH TIME	[100/280/600]	600ms
PAUSE TIME	[1-9]	3sec
ERROR RATE	[5%/10%/20%]	5%
MAKE BREAK RATIO (470 only	[1] 40/60 [2] 33/66	40/60

MODEM SPEED

Select baud rate of 14400, 12000, 9600, 7200, 4800, or 2400 bps. The lower the baud rate, the larger the acceptable error rate. T30 protocol has a fixed speed of 300 bps in the protocol mode. When the TX speed is set to 14400 or 12000 bps, the RX speed will be either V.17 or V.33. When the TX speed is set to 9600 or 7200 bps, the RX speed will be either V.29 or V.27 ter. When the TX speed is set to 4800 or 2400 bps, the RX speed will be V.27 ter.

FAX TX LEVEL

FCC requires the transmission level be less than -9 dBm. The transmission level can be set between 0 and -15 dBm in 1dBm steps.

Accuracy is +0/-3 dBm.

FAX RX LEVEL

If reception level is set to -43 dBm, receive sensitivity will be between 0 and -43 dBm.

FLASH TIME

Choose telephone flash time 100/280/600 milliseconds.

PAUSE TIME

Sets the length of the pause time from 1 to 9 seconds, when the pause button is pressed.

ERROR RATE

Sets the % of errors allowed during transmission before training down.

MAKE BREAK RATIO

The make and break time during pulse dial.

Firmware Matrix

WorkCentre 480cx, Product Code KU3 (USO/XCL)

Firmware Version	Description of Change	Kit and Bulletin Numbers	Factory Installed Serial Number	Field Installed Serial Number
1.1.0	Initial Production	N/A	N/A	N/A
1.1.2	Changes French messages in the LCD. Corrects the color and photo ink drop count available in Service Mode.	N/A	N/A	N/A
1.3.0	Changes CNF tone detection to reduce the detection of voice as a CNG tone. This will eliminate the interruption of a voice call with fax tones. Improved cartridge detection to accept all specified cartridges as valid. This should eliminate the "(X) CART EMPTY" message when a new cartridge is installed.			

WorkCentre 480cx, Product Code KU4 (XBRA/XLA)

Firmware Version	Description of Change	Kit and Bulletin Numbers	Factory Installed Serial Number	Field Installed Serial Number
2.0.0	Initial Production	N/A	N/A	N/A

WorkCentre 480cx, Product Code KU5 (XE)

Firmware Version	Description of Change	Kit and Bulletin Numbers	Factory Installed Serial Number	Field Installed Serial Number
3.0.0	Initial Production	N/A	N/A	N/A

WorkCentre 470cx, Product Code MC7 (USO/XCL)

Firmware Version	Description of Change	Kit and Bulletin Numbers	Factory Installed Serial Number	Field Installed Serial Number

WorkCentre 470cx, Product Code MC8 (XBRA/XLA)

Firmware Version	Description of Change	Kit and Bulletin Numbers	Factory Installed Serial Number	Field Installed Serial Number

WorkCentre 470cx, Product Code MC9 (XE)

Firmware Version	Description of Change	Kit and Bulletin Numbers	Factory Installed Serial Number	Field Installed Serial Number

Modifications

The machine serial number listed identifies the earliest number of the change on the manufactured machine. Refer to the classification for information as to when to use the change. Read the description to determine how the machine will benefit from the modification. Refer to the kit number to order the modification kit. Refer to the bulletin number for additional information.

Refer to the factory and field install serial numbers to determine which modifications were installed at the factory and which were installed in the field.

USO: Modification Classification

M Mandatory

R Install at time of repair

O Optional

N Not for field retrofit. Factory retrofit only.

XE: Modification Classification

Class 1 Safety modification which must be made in the field immediately; parts are available.

Class 2 Modification made in the field, retroactive on all machine, on next service call.

Class 3 Repair by replacement.

Class 4 Modification incorporated at discretion of local management or to customers requirements.

Class 5 Production only.

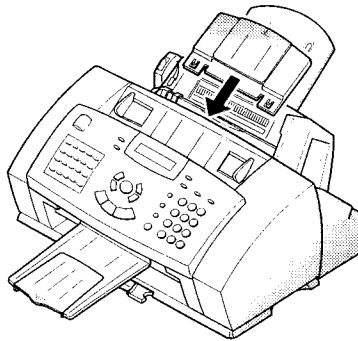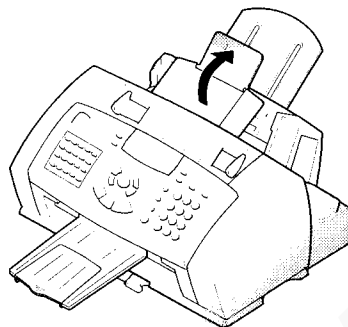| Modification Classification	Description	Kit and Bulletin Numbers	Factory Installed Serial Number	Field Installed Serial Number

Installation

Installing the Document Tray

1. Pull the document tray upward.

2. Fold out the extender on the document tray.

Installing the Document Exit Tra

1. Insert the two tabs on the document exit tray into the slots on the front of your machine.
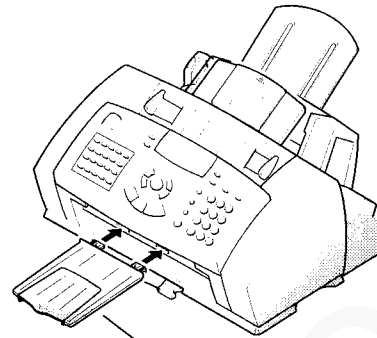
Document Exit T

2. Fold out the extender, if necessary.
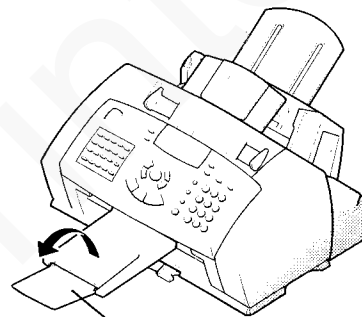
Extender

Connecting the Telephone Line

1. Plug one end of the telephone line cord into the TEL LINE jack and the other end into a standard phone wall jack.

To a standard telephone wall jack
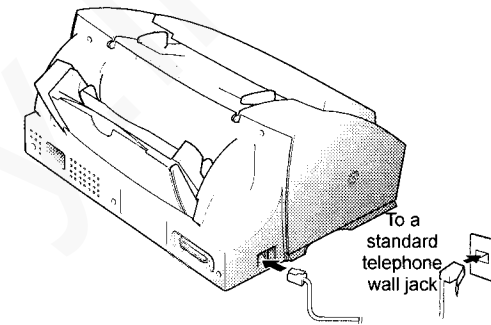
Connecting an Extension Phone (Optional)

1. Plug one end of the modular cord into the EXT.TEL jack on the left side of your machine.
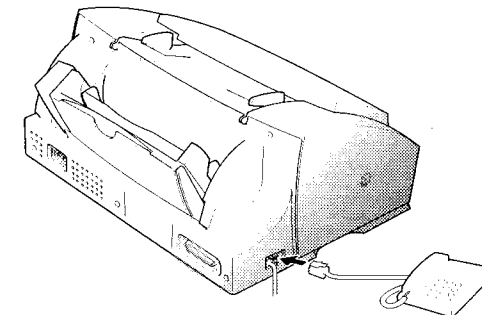
2. Plug the other end of the cord into a modular jack on a telephone answering device or a regular telephone to use as an extension.

Connecting the Printer Cable

1. Connect a bi-directional parallel printer cable to the 36 pin printer jack on your machine.

   NOTE: Use a parallel cable that is approved for IEEE-1284 bi-directional communications.

2. Fasten the metal clips to the parallel cable.

3. Connect the other end of the parallel cable to your computer.
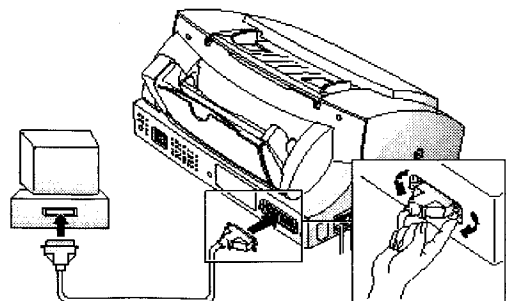
Loading Paper

You can load approximately 100 sheets of 20 lb. paper.

1. Pull the APF Extension on the APF all the way up.
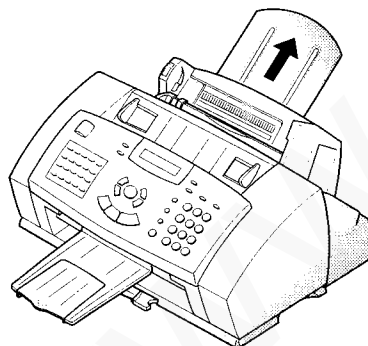
2. Fan the paper and insert the paper with the print side facing you and next to the far right paper guide.
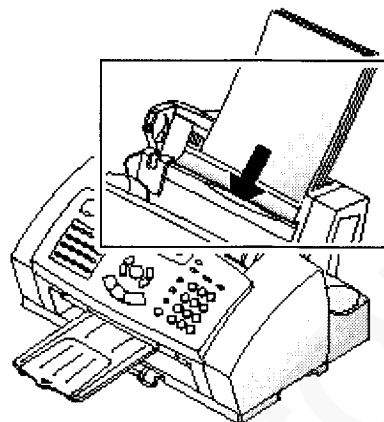
3. Hold the left paper guide and move it to the right to match the width of the paper

   Paper Guide
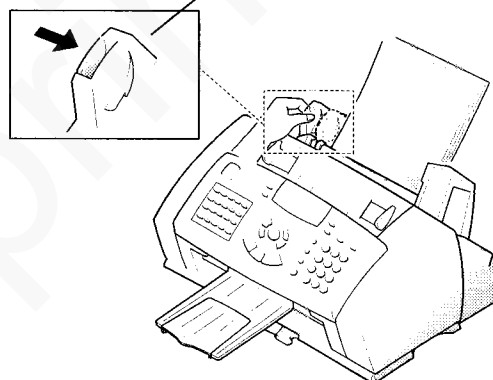
Connecting the AC Power Cord

1. Plug one end of the cord into the back of the machine and the other end into a standard, grounded 3-prong AC power outlet.
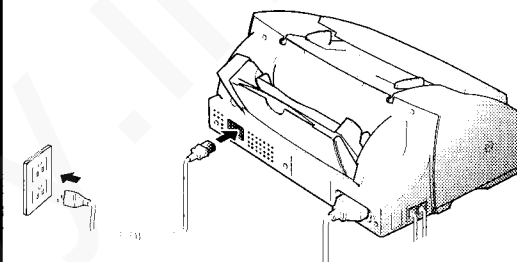
2. The machine turns on.

Installing the Print Cartridge

Print Cartridge

1. Lift the control panel and open the ADF Door.

ADF
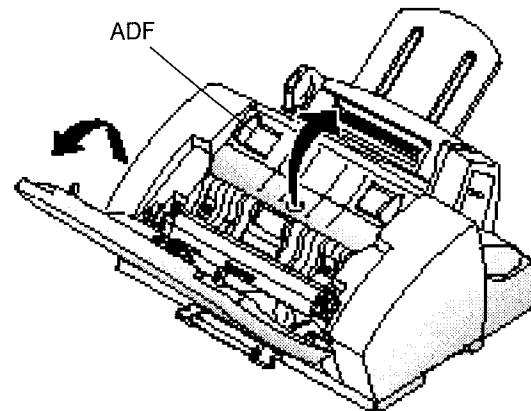
2. If you are replacing a used cartridge, remove the old cartridge.
   Pull the print cartridge handle toward you until you hear a click, then remove the print cartridge.

Cartridge Handle
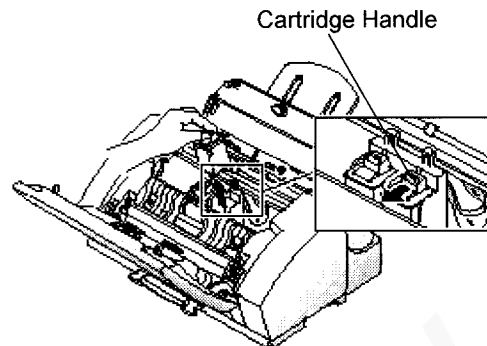
3. Remove the new print cartridge from its packaging. Hold the print cartridge by the black areas or colored top only. Do not touch the copper area.
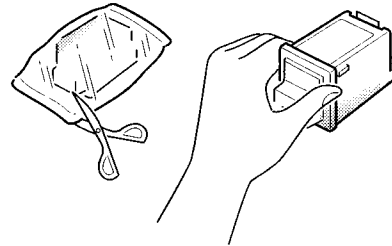
4. Carefully remove the tape covering the printhead. Be sure to remove all the tape.
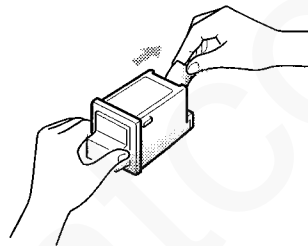
5. Insert the print cartridge in the carriage.
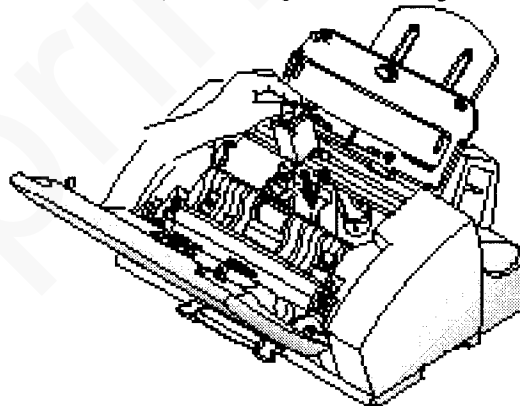
6. Push the cartridge firmly in the direction of the arrow until it clicks into place.
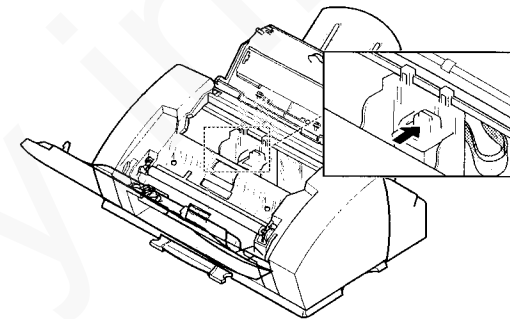
7. After installing the print cartridge, close the ADF Door and the Control Panel.

8. Make the required selections using the up and down arrows. Then press ENTER.

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Section Contents

Introduction

This section contains connector and PWB location drawings, and pin assignment information.

This information is not specific to individual procedures, but is provided for general reference.

Connector numbers are repeated on more than one component.

Component Location BSD
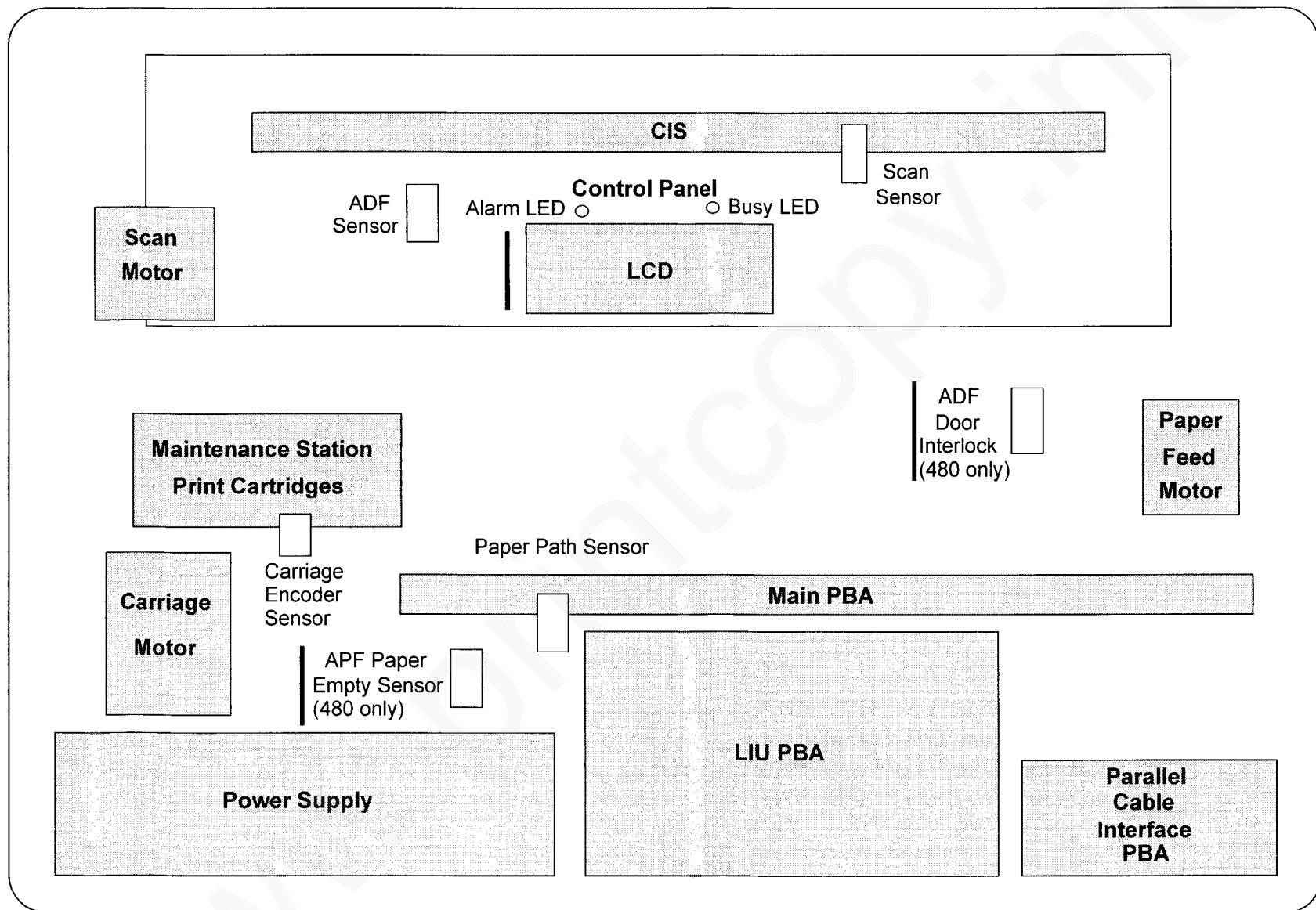
Figure 7 - 1

Top Rear View

Figure 7 - 2
Rear View

Power Supply

6

1

CON1

250VOLT 2.0amp

FI

HOT

NEUTRAL

AC INPUT

Figure 7 - 3
Rear View

Scan
Sensor

5   1

Control Panel PBA

CN1

ADF
Sensor

Busy LED ○   ○ Alarm LED

1   CN2   14

1   14

LCD

Figure 7 - 4
Rear View

CIS

1   CN1   12
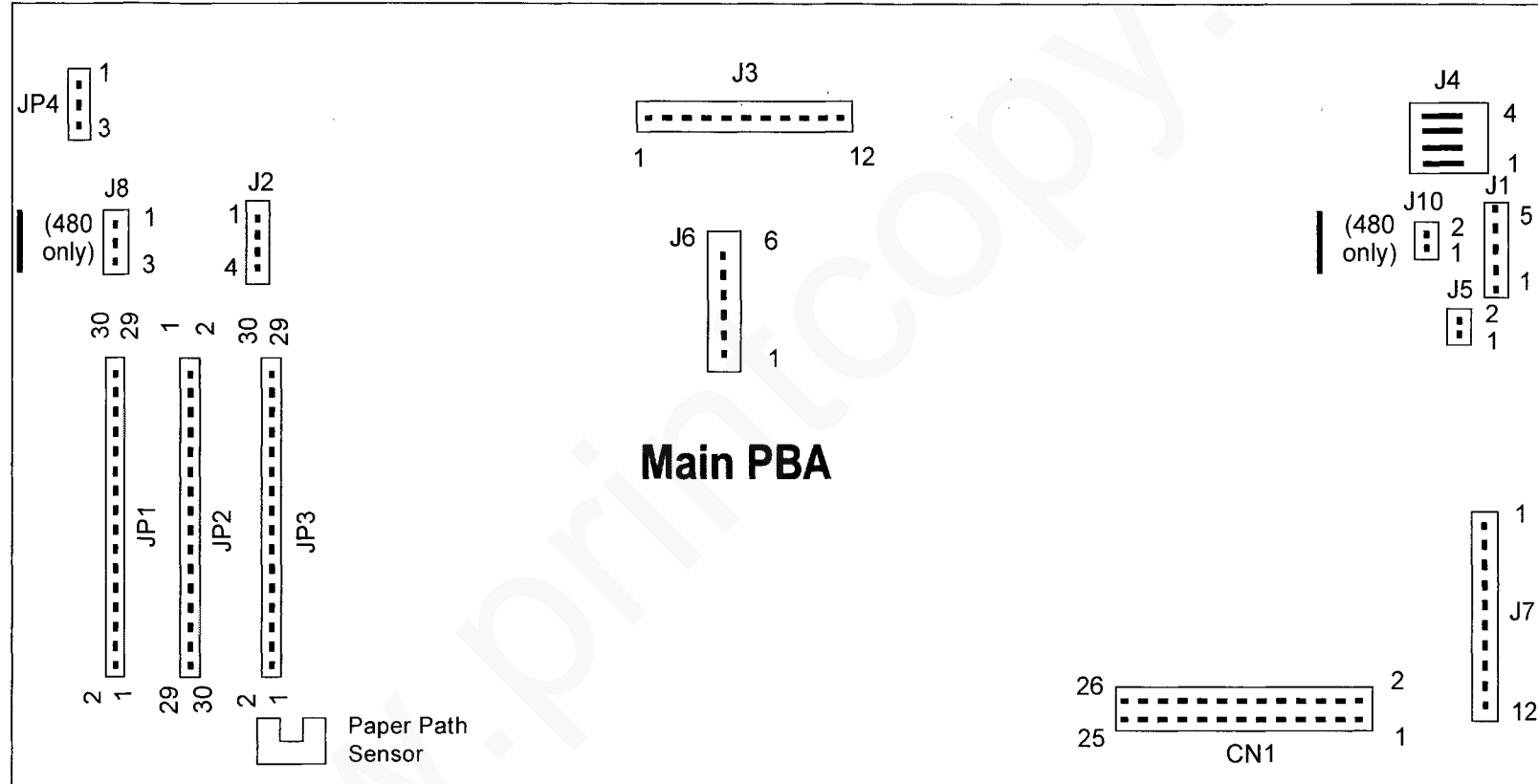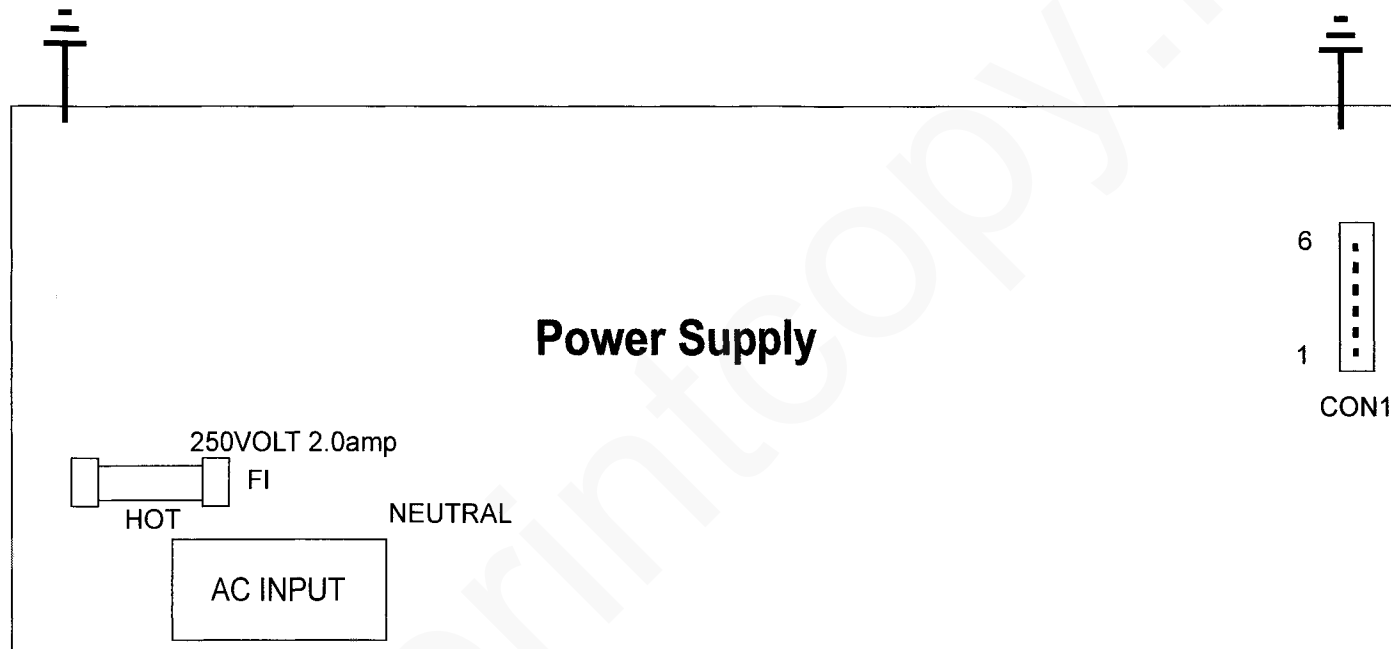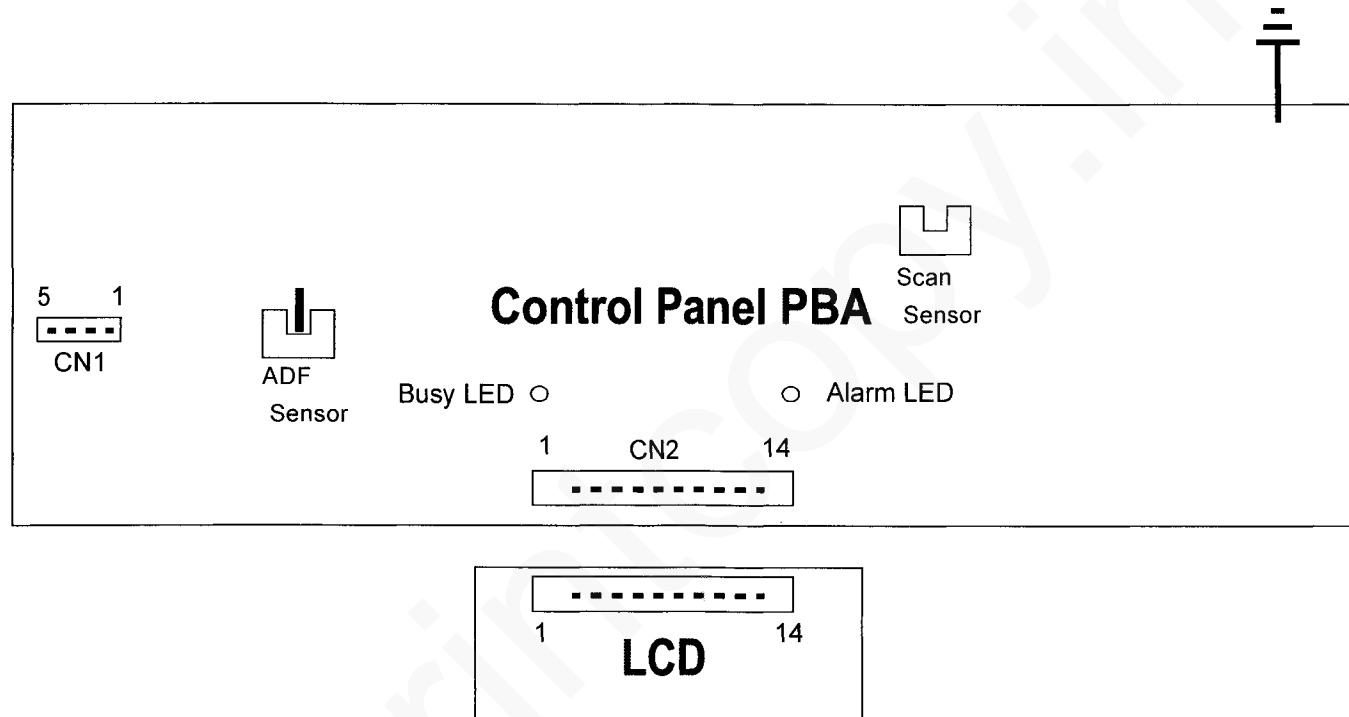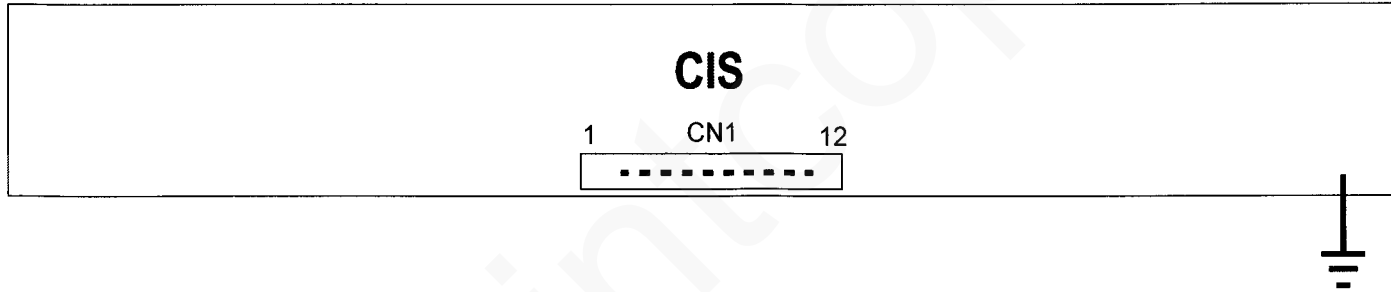
Figure 7 - 5
Rear View

Other

Other

LIU PBA

33
DP
40

P1   P2

1

12

IMP
CTR21
P5

Other
DCR
CTR21
P4

5

1

P3
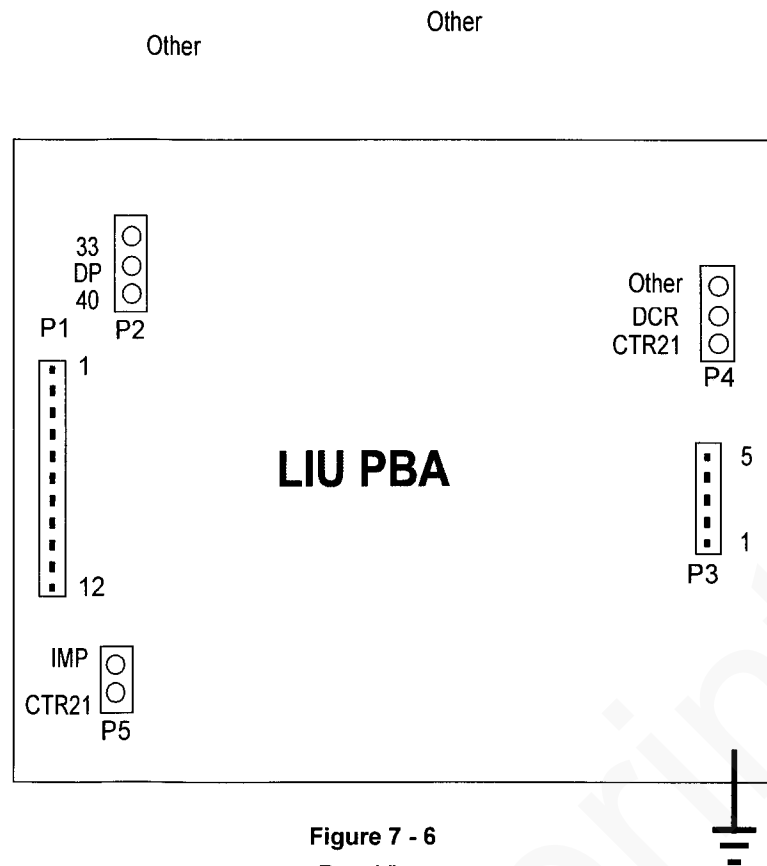
Figure 7 - 6

Rear View

Jumpers P2, P4 and P5 are XE Only

26   2
25   1
CN1

**Parallel Cable
Interface PB**

18   1
36   2
CN2
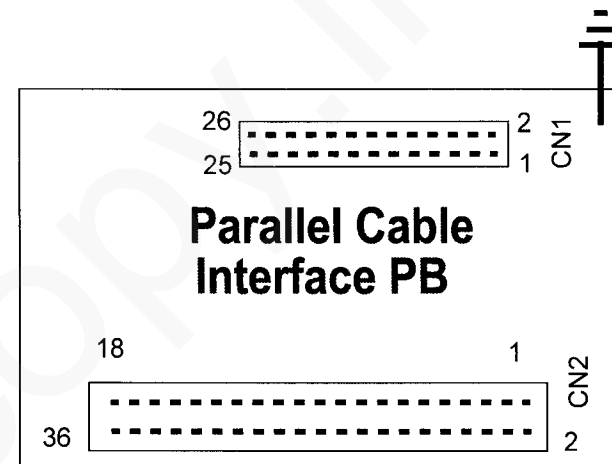
Figure 7 - 7

Rear View
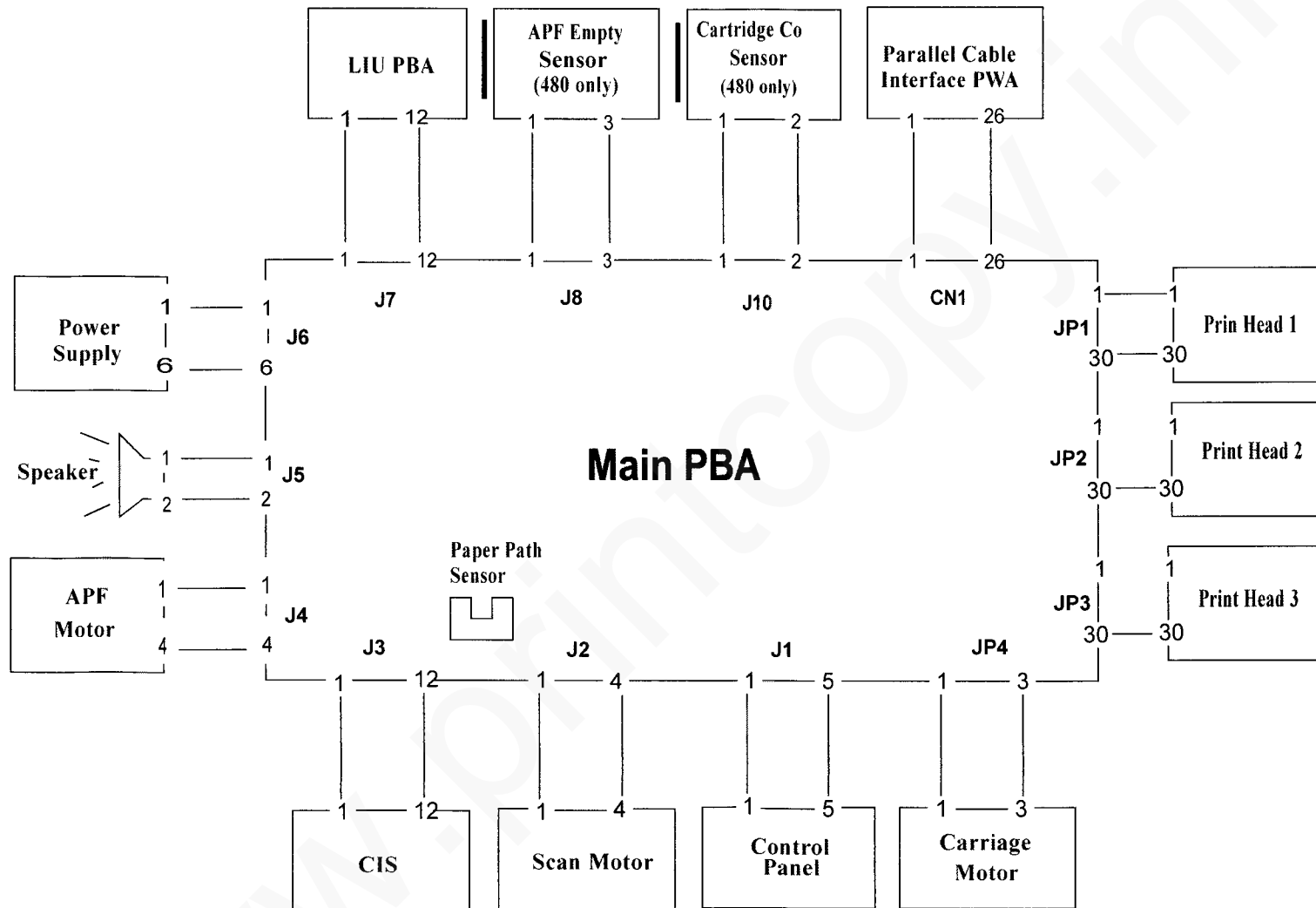
Figure 7 - 8

Connector Pin Assignments

Main PBA Connectors

Table 7-1. **J1 to Control Panel**

Pin	Description
1	GND
2	+5v
3	OPE TXD
4	OPE RST
5	OPE RXD

Table 7-2. **J2 to Scan Motor**

Pin	Description
1	TH ND
2	TH D
3	TH NA
4	TH A

Table 7-3. **J3 to CIS**

Pin	Description
1	CIS SIG
2	GND
3	+5V
4	VREF ADC
5	GND
6	CIS SH

Table 7-3. **J3 to CIS**

Pin	Description
7	GND
8	CIS CLK
9	LED
10	LED
11	LED
12	+11.75V

Table 7-4. **J4 to Paper Feed Motor**

Pin	Description
1	LF A
2	LF NA
3	LF B
4	LF NB

Table 7-5. J5 to Speaker

Pin	Description
1	SPK +
2	SPK -

Table 7-6. J6 to Power Supply

Pin	Description
1	+5VDC
2	GND
3	+11.75VDC
4	GND
5	GND
6	+30VDC

Table 7-7. J7 to LIU PB

Pin	Description
1	LINE RX
2	GND
3	LINE TX
4	+11.75VDC
5	REMOTE
6	CML 1
7	OFF HOOK
8	RING DETECT
9	+5VDC
10	LIU TXD

Table 7-7. J7 to LIU PBA

Pin	Description
11	GND
12	LIU RXD

Table 7-8. J8 to APF Tray Empty Sensor (480 only)

Pin	Description
1	P EMPTY
2	GND
3	+5VDC

Table 7-9. J10 to ADF Cover Interlock (480 only)

Pin	Description
1	Cover Open
2	GND

Table 7-10. J11 Jumper

Pin	Description
1	Jumper to pin
2	Jumper to pin

Table 7-11. J12 Jumper

Pin	Description
1	Jumper to pin
2	Jumper to pin

Pin	Description
1	GND
2	GND
3	STD
4	AUTO FD
5	INIT
6	SLCT IN
7	GND
8	GND
9	CD0
10	CD1
11	CD2
12	CD3
13	CD4
14	CD5
15	CD6
16	CD7
17	GND
18	GND
19	+5VDC
20	ACK
21	PF
22	BUSY
23	ERROR

Table 7-12. **CN1 to Parallel Cable Interface PWA**

Pin	Description
24	SLCT
25	GND
26	GND

Table 7-13. **JP1 to Carriage/Print Head 1**

Pin	Description
1	CP9
2	GND
3	CP11
4	CP13
5	GND
6	CP14
7	CAG1
8	CP12
9	CP16
10	CP10
11	GND
12	CA5
13	CA4
14	CP0
15	GND
16	CA3
17	CP 6
18	CP4

Table 7-13. **JP1 to Carriage/Print Head 1**

Pin	Description
19	GND
20	CA2
21	CP2
22	CA1
23	TBD
24	CB1
25	CH1
26	AMP_TEMP
27	CHY
28	+5VDC
29	CHX
30	GND

Table 7-14. **JP2 to Carriage/Print Head 2**

Pin	Description
1	GND
2	BA5
3	BA4
4	TBD
5	GND
6	BA3
7	TBD
8	BP4
9	GND

Table 7-14. **JP2 to Carriage/Print Head 2**

Pin	Description
10	BA2
11	BP2
12	BA1
13	BS1
14	TBD
15	CA1
16	TBD
17	CP15
18	CA12
19	CA7
20	CP1
21	TBD
22	GND
23	CP3
24	CP5
25	CA9
26	GND
27	CP7
28	CAI0
29	CA11
30	CA12

Table 7-15. **JP3 to Carriage/Print Head 3**

Pin	Description
1	---
2	---
3	---
4	---
5	---
6	BA13
7	BP15
8	TBD
9	BA7
10	BP1
11	BA9
12	GND
13	BP3
14	CP9
15	TBD
16	GND
17	BP7
18	BA10
19	BA11
20	GND
21	BP9
22	GND
23	TBD
24	BP13

Table 7-15. **JP3 to Carriage/Print Head 3**

Pin	Description
25	GND
26	BP14
27	TBD
28	TBD
29	BP16
30	BP10

Table 7-16. **JP4 to Carriage Motor**

Pin	Description
1	CRA
2	CRNA
3	---

Carriage Connector to Encoder Sensor

Table 7-17. **J1 to Encoder Sensor**

Pin	Description
1	AMB TEMP
2	CHY
3	+5VDC
4	CHX
5	GND

LIU PBA Connectors

Table 7-18. **P1 to Main PBA**

Pin	Description
1	LINE RX
2	GND
3	LINE TX
4	+11.75VDC
5	REMOTE
6	CML 1
7	OFF HOOK
8	RING DETECT
9	+5VDC
10	LIU TXD
11	GND
12	LIU RXD

Table 7-19. **P2 Empty**

Pin	Description
1	---
2	---
3	---
4	---
5	---
6	---
7	---
8	---

Table 7-19. **P2 Empty**

Pin	Description
9	---
10	---
11	---

Table 7-20. **P3 to Telephone/Extension Jacks**

Pin	Description
1	Line Jack (Yellow)
2	Line Jack (Black(
3	---
4	Extension Jack (Red)
5	Extension Jack (Green)

Power Supply Connector

Table 7-21. **CON 1 to Main PBA**

Pin	Description
1	+5VDC
2	GND
3	+11.75VDC
4	GND
5	GND
6	+30VDC

Parallel Cable Interface PBA Connectors

Table 7-22. **CN1 to Main PBA**

Pin	Description
1	GND
2	GND
3	STD
4	AUTO FD
5	INIT
6	SLCT IN
7	GND
8	GND
9	CD0
10	CD1
11	CD2
12	CD3
13	CD4
14	CD5
15	CD6
16	CD7
17	GND
18	GND
19	+5VDC
20	ACK
21	PF
22	BUSY

Table 7-22. **CN1 to Main PBA**

Pin	Description
23	ERROR
24	SLCTR
25	GND
26	GND

Table 7-23. **CN2 to Parrallel Cable**

Pin	Description
1	STD
2	CD0
3	CD1
4	CD2
5	CD3
6	CD4
7	CD5
8	CD6
9	CD7
10	ACK
11	BUSY
12	PF
13	SLCT
14	AUTO FD
15	---
16	GND
17	GND

Table 7-23. **CN2 to Parrallel Cable**

Pin	Description
18	+5VDC
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
25	GND
26	GND
27	GND
28	GND
29	GND
30	GND
31	INIT
32	ERROR
33	---
34	---
35	---
36	SLCT IN